AUGUST, 1944

# Industrial FINISHING

Published Monthly in the Interest of Modern Production Finishing

TECHNOLOGY DEPT:

AUG 22 194
DETRO

## Easy

**RECIPROCATING ELECTRIC SANDER**

**oes the work of to 3 Hand Operators**

ITH the EASY Sander even inexperienced men or women turn out more and better k than two or three hand operators. For sand- rubbing, polishing, "feather-edging" and de- ring. *For wet or dry work, curved or flat sur- s, on wood, metal, plastics, slate, composition, other materials.*

e straight-line riciprocating action of the ASY" mechanically duplicates the approved k-and-forth motion of hand block sanding. t, short stroke, floating sanding pad, and uni- al drive, prevents gouging, swirls, laps, or ing of work. *Write today for descriptive lit- ure and prices.*

**troit Surfacing Machine Co.**

W. Davison Detroit 4, Michigan

Sanding pad conforms to curved surface.

Sanding fuselages, wings, spars, stabilizers.

Used with jig for extremely large or small parts

# Still out in front—
# and no hurdles down!

BEFORE THE WAR Roxalin Rincontrol was an outstanding wrinkle finish because of its uniformity, hardness and general dependability. And in spite of recent restrictions on many critical raw materials which have made frequent reformulation necessary, this Roxalin engineered finish still sets the pace.

No user has had to discontinue Rincontrol because of unsatisfactory performance during these times of change. The Roxalin laboratories have always come up with a new formula that did the job as well.

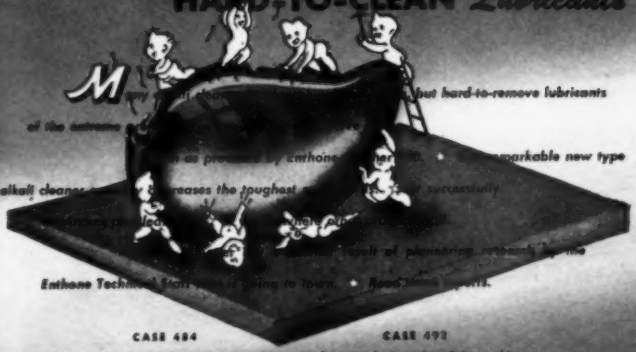
As a result, Roxalin's prewar standards have consistently been maintained.

**There are Rincontrol formulations now available for general industrial use. Write for descriptive bulletin.**

ROXALIN *Flexible* FINISHES
INCORPORATED
ELIZABETH • NEW JERSEY

# ANNOUNCING

## A NEW DETERGENT *for* STEEL *Processed with* HARD-TO-CLEAN *Lubricants*



**CASE 484**

Prominent electronics equipment manufacturer. Plating steel chassis. Cleaner required high current density to be effective. Corners of chassis where there was low current density not cleaned. Smutty coating of the plate. Changing to Cleaner 100 eliminated this trouble. Because of its high detergent action Enthone Cleaner 100 does not need high current density. This assures thru protection for its outstanding performance as a good cleaner as well as an electrolytic cleaner.

**CASE 492**

Leading manufacturer of vending machines. Pre-cleaning parts with trichloroethylene with a well-known brand name. After changing to Cleaner 100 reports "Working beautifully . . . saves enough money by eliminating degreasing to pay for Cleaner 100 and make a profit to boot."

THE ENTHONE COMPANY 441 Elm St., New Haven, Conn.

ENTHONE

# CLEANER 100

*A MODERN FAST ACTING ALKALI CLEANER FOR STEEL*

# *Spotlight*

YOUR PRODUCT
WITH
BERRY BROTHERS'
MULTIFORM

Now made with non-critical materials, Berry Brothers' Multiform is the perfect answer to today's heater finishing question. ¶ Its two-color effect adds tremendously to the eye appeal and merchandising value of circulating heaters now being produced for the Locke Stove Company by the Mount Vernon Furnace Company. ¶ It is applied as a one-coat, two-operation finish. A brown ground coat is sprayed directly to the metal, and a contrasting fine-line pattern coat of orange is sprayed over it. One bake of 30 minutes at 400° dries both coats. Baking time and temperature can be varied. No special spraying equipment is needed. Other color combinations are also available. ¶ Berry Brothers' Multiform has long been a favorite finish in the heating industry, and now it offers the first practical, colorful, decorative finish under wartime restrictions. Smooth, hard, easy to clean! No trouble in finishing department! Low cost! Write for further information.

FREE NEW BULLETIN

Inquiries will receive an interesting new bulletin, appearing in Sweet's Product Design File, describing other Berry Brothers' Industrial Finishes—a helpful bulletin for post-war planners. Write for your copy.

**BERRY BROTHERS**
Paints · Varnishes · Enamels · Lacquers
Detroit 7, Mich. Walkerville, Ont.

JERSEY CITY • BOSTON • CINCINNATI • CHICAGO • ST. LOUIS

*QUALITY FINISHES SINCE 1858*

TWENTIETH YEAR OF PUBLICATION

# Industrial FINISHING

W. H. ROHR, Editor E. A. DOSCH, Assoc. Editor

Vol. XX, No. 10 AUGUST, 1944 $2.00 a Year

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# Victory in sight, BUT–

• With the war at its climax all our energies and resources are still concentrated on production for Victory. And until the last shot is fired, helping beat the Axis will be our main business.

But the military Victory will mean no armistice for us nor for other American industries. For the job of swinging over to and maintaining peacetime production will be urgent and enormous.

We will be ready for this job. Many Glidden wartime developments have already been field-tested for peacetime applications. And Glidden laboratories are working full speed on new finishing developments to keep abreast of industry's ever-increasing need for faster and better quality production.

If you have an immediate or postwar finishing problem, we would welcome the opportunity of discussing it with you. Just drop us a line.

**THE GLIDDEN COMPANY** • Cleveland 2, Ohio

TIME-TESTED

**SURFACENE COMBINATION STAIN AND FILLER**

One coat application against conventional two coats.

Saving—one application—one handling.

Five hours air dry for recoating, against 48 hours normal dry of Water Stain and Filler.

One hour dry at 140° F. with controlled humidity.

Clarity of Water Stains.

★ ★ ★

Also Surfacene Pigmented Wiping Stains, Glazes and Toning Stains.

**GLIDDEN** *Pacemaker in Paints*

# Letters from Readers

## Electrical-Conducting Paint

With reference to your letter dated July 7th, we wish to advise that we did not find an Electrical-Conducting Paint satisfactory for our requirements.—M. I. Co.

## Cigarette Proof Finish

Would you kindly give us the same information as supplied to "V.A.", page 6 of your June issue, with regard to cigarette-proof clear finish? —J. W. Ltd., Canada.

## White Metal Primer for Magnetic Inspection

We have been much interested in reading, on pages 37 to 42 of the September issue of INDUSTRIAL FINISHING, an article by G. C. Close, entitled, "Coating Aids Magnetic Inspection." In the course of the article reference is made to, "A white organic metal primer, which can be used in place of cadmium coating." We would be obliged if you could give us the formula used, or put us in touch with the company supplying it. Also, let us know whether it is still being used for the purpose described.—H. Ltd., Sheffield, England.

## Washing Machine Finish

It is our intention, on the cessation of hostilities, to manufacture a cheap line of manually-operated washing machines. The outer casing of the machines will be made of galvanized or plain mild sheet steel, of about 20-22 S.W.G.

We wish to have a first-class finish for the casing—one that will stand warm soapy water, at the same time being colorful and tough. Vitreous enamel would be ideal, but for various reasons we prefer an alternative finish if possible.—W. P. Ltd., Melbourne, Australia.

## Wood Toy Finishes

Would you please inform us as to the type of stain used to finish toys for children's use at the ages of two to four years old? Also, tell us where this stain or dye can be obtained. The colors to be used are red, black, green, yellow and white. What is the best way to apply them? The longest piece is ½x½x20-in.; the widest is ½x5x8½-in.—K. P. Co.

## For Snow Fence

In answer to O. INDUSTRIES' inquiry about water-soluble paint for snow fence (July issue, page 8) we have used Loew's mineral red in water and for better adhesion we added a can of lye We believe that any paint house would have dry mineral red.—K. R. Co.

## Dipping Shellac, Lacquer

We would like to know if you have any magazines or catalogs on dipping with shellac or lacquer.—R. E. Co.

We know of no publications covering this subject exclusively, but we have published many articles about dipping in past issues of INDUSTRIAL FINISHING.—ED.

## To Smooth Masonite Veneer

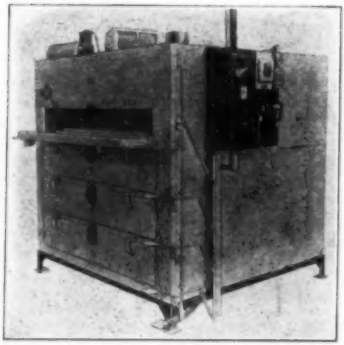
It would be appreciated if you would advise us of the names of manufacturers of sanding equipment which can be used in the finishing of Masonite Veneer and similar products to give a suitable finish for the application of lacquers and other finishes. The size of the pieces to be finished will be approximately 42-in. square. —C. F. Co.

## To Remove Blackout Paint

We were wondering if you could make any suggestions that would help us with a blackout paint remover problem which, to date, we have been unsuccessful in solving.

Over two years ago we applied to the windows of our plant a black casein paint. This was, in turn, cov-

**DRY SMALL PARTS or FLAT SHEETS..**



# KOCH

## SHELF TYPE CABINET OVEN

- Pre-heat plastics or dry other sheet materials up to 5-ft. square.
- Finish-bake small parts; dry metal parts after washing, etc.
- Electrically heated, 200-550° F.; indicating control.
- Four compartments; doors can be closed by foot pedal.
- Controlled recirculation; high limit switch; air-flow safety.

***For Additional Information Phone, Wire or Write***

GEORGE KOCH SONS, INC.

Makers of

**INDUSTRIAL EQUIPMENT**

2118 Penna. Street
Evansville 4, Ind.

ered with adhesive tape. To date we have found nothing except lye which will clean up these windows. One of your advertisers has been unsuccessful in trying to solve this problem for us and we have contacted the manufacturer of the casein paint who advises that they know of no practical solution. The difficulty, of course, is in trying to remove the adhesive gum and paint at the same time. We would like to obtain, if at all possible, a solution which, upon application, would act like an ordinary paint remover and not entail too much labor expense.

We have tried various paint removers and also lacquer removers without success.

We are writing another of your advertisers requesting a sample of their material, which we thought might possibly do the trick.

We would be glad to try out any suggestions that you may offer.—E. L. Co.

---

It is likely that you will have to do some experimenting until you obtain a liquid that will soften the material on your windows; then you will probably have to resort to the use of some kind of sharp steel tool to scrape off, cut off or pry loose the material now attached to your windows. We regret that we have nothing more specific to offer at the moment.—ED.

---

## Zinc Chromate Primer

We are informed that on page 28 of the June, 1944 issue of INDUSTRIAL FINISHING there is an article pertaining to Zinc Chromate Primers, and we are interested in reading this. If you no longer have a copy of the June issue, we would be pleased to receive a sample copy of some other issue . . . as we may be interested in subscribing to this magazine.—I. C. CORP.

---

We happen to have reprints of this article, which appeared in both May and June issues, and we are sending you a copy of same.—ED.

---

## Silk Screen Stencils

On page 4 of June issue of INDUSTRIAL FINISHING Magazine, we notice the first article has reference to silk screen stencils and various methods of graining. We also have the same problem of graining compo board or paper beaver board panels, to imitate wood, and will appreciate very much any information you can give us on the subject.—FIXTURE CO.

# *New Items? YES...*

## PLENTY OF THEM!!!

Tell us your finishing problems and we will tell you about the new items we have developed to solve them.

**V. J. DOLAN & COMPANY, INC.**

***Manufacturers "Unquestionable Quality" Industrial Finishes***

**1830-32 NORTH LARAMIE AVENUE CHICAGO, ILL.**

# BLACK-MAGIC —THE ECONOMICAL BLACK OXIDE FINISH

***BLACKENS AND RUST-PROOFS! WON'T RUB OFF!***

**ONE-BATH** Process for all steels except stainless. A fast Cold Process for zinc base die castings and thin-sheet fabrications, such as grommets, eyelets, etc. Also baths for Cadmium, copper and brass. All baths impart a rich, permanent, integral black.

**SILCO** A vitreous-type spray finish for steel and brass. Black, white and Army and Navy colors; also others. Bakes to full hardness in any industrial oven at 350° F. Meets all requirements and tests JQD 515, Q. M. Dept. Silco and Black-Magic samples on request. (Both are non-priority.)

BLACK-MAGIC BLACKING SALTS for STEEL, IRON COPPER, ZINC CADMIUM

•

WITCH-DIP WITCH-OIL FINAL FINISHES

•

SILCO PROTECTIVE COATING

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Cleaners Wetting Agents Acid Inhibitors Heat Treating Salts

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ALL THE BEAUTY
of Rubbed Finishes
Without Rubbing

PERFECTION
SYNTHETIC
*Flat Finishes*

**Obtain the rich effect of rubbed finishes—WITHOUT RUBBING—with Perfection Flat Finishes. Hard, durable, vividly transparent—unique water-proof, liquor-proof blends of fossil gums and gloss varnish. Free from orange peel—protect and enhance natural beauty of wood and stain—retain full sheen even after long standing. For maximum satisfaction at minimum cost, try Perfection Flat Finishes in your own plant.**

**PERFECTION PAINT & COLOR CO.**
**Indianapolis 2, Indiana**

## Floor-Marking Machine; Paint Rejuvenator

We are interested in floor-marking and also paint-rejuvenating machinery. We would be pleased to have you send us a list of companies who manufacture these types of machines so that we may contact them direct.—W.T. Co.

## Fireproofing Wood

I have been asked if there is any type of coating that can be applied to the outside of wood to make it fireproof. If such a mixture is available, will you be kind enough to let me know where it can be procured?—R. N.

## Roller Coating Inquiries

On page 5 of July issue of INDUSTRIAL FINISHING Magazine there appears a letter written by A. C. Jones Co., stating that they have had an unusual background of experience in building roller coaters and in the furnishing of tailor-made finishes to be so applied. There is a possibility that we might be interested in some such equipment and we would therefore appreciate receiving their literature and data sheets.—W. S. Co.

Information supplied. (This letter is typical of several on the same subject received here recently.)—ED.

## Toxic Wood Repellant

Please send us the same information that was asked for in a letter published under the above title in July issue, Page 5. We have the same problem.—CHAIR & NOVELTY CO.

## Magnetic Inspection Article

Would it be possible for you to furnish us with a reprint of the article on magnetic inspection by G. C. Close, printed on pages 37-42 in the September, 1943 issue of INDUSTRIAL FINISHING? Or do you have an extra copy of that issue which you could send us? Our inspection department has evinced an interest in this particular article. Unfortunately, the September, 1943 copy of your magazine is missing from our files, so that we cannot supply that department with the needed information. Please address your reply, Attn: General Librarian, at our letterhead address. We will appreciate any assistance you can give us.—Gyroscope Co.

Extra copy supplied.—ED.

Soon---
Peace cannot be too far away—
And Stille-Young will be ready with the materials you need:
1. Quality that works.
2. Price that protects.
3. Service that gets things done.
We have helped in war.
We will continue to serve with a peace-time program that will be of greater value than ever to our customers.
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MANUFACTURERS: LACQUERS · FILLERS · STAINS · ENAMELS · PAINTS
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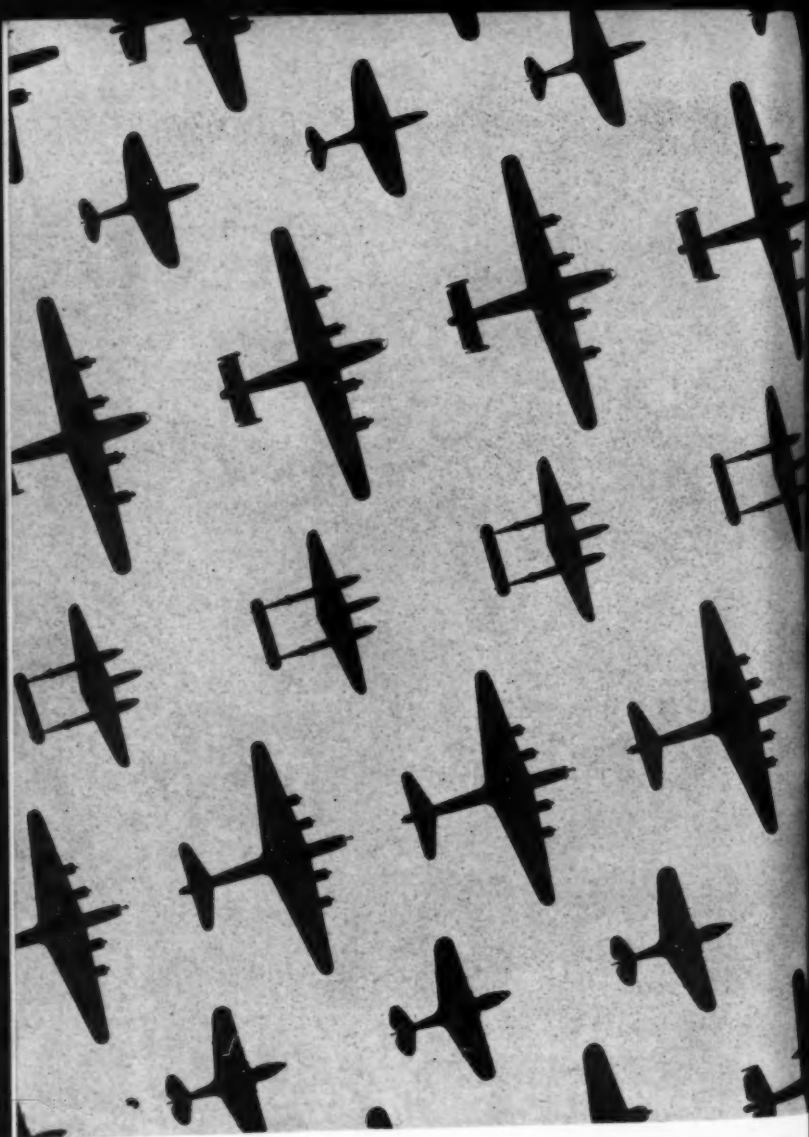


THE LILLY COMPANY

HIGH POINT, N. C.

Planes! Planes! Planes!
Remember the cries of anger and despair of only two short years ago? "Why don't they send us more planes? Why are men dying while only German planes and Japanese planes dominate the skies? Why can't we have more planes?"
Two years in terms of the living are a long time, but two years in terms of history are as nothing. And in two years the productive capacity of the United States has turned this picture into clouds of Allied airplanes, all the way from the South Pacific to Africa, Italy, France, Belgium, Poland and Germany.
What has happened these last two years is not only a miracle of production, but a miracle of a nation's will to win. The desperate cry for "Planes! Planes! Planes!" can be heard in many places today, but they are not from Allied lands. They come now from the lands of the oppressors. We were last, perhaps, but not least.
Lilly's Finishes are never last or least. They are DEPENDABLE in quality, quantity and performance —in war-time or in peace-time.

NY LILLY VARNISH COMPANY
INDIANAPOLIS, IND.

# Do you know...?

**Q.** Two-tone painting of post-war cars will make them look:
☐ Larger ☐ Smaller
☐ More streamlined

**A.** Depending on how it's done, two-tone painting can produce almost any desired effect. Wherever two or more tones are needed, Permacel masking tape helps do the job quicker, better. Holds tight till the job is finished, then strips off easily—leaves clean surfaces, razor-sharp edges.

**Q.** Tape is used in women's shoes:
☐ In place of laces ☐ To reinforce
☐ For decoration

**A.** To reinforce portions of heels, insteps and toes. A special Permacel shoe tape provides reinforcement just where needed—also cushions the strip of metal in the instep. Another interesting example of the Industrial Tape Corporation's ability to develop special tapes to meet unusual and exacting requirements.

**Q.** Insignia and identification on hospital cars are often applied:
☐ With paintbrush ☐ With stamp
☐ With spraygun

**A.** With spraygun. Permacel paper masking speeds the job of painting insignia and identification on hospital cars, freight cars, ships and many other vehicles. Permacel is used to mask the design—protects surfaces surrounding the symbol during painting—then strips off clean, leaving perfect angles, clean-cut color edges.

## Quiz on timely production short-cuts—No. 5

**Q.** Greatest danger to which these idle planes are exposed is:
☐ Enemy bombing ☐ Corrosion
☐ Sabotage

**A.** Corrosion. Also damage from dust and dirt. That's why ground crews often seal vulnerable openings and vents of idle airplanes with Permacel moisture-proof cloth tape (Utilitape). After the war this Permacel tape will be available in nine sun-fast colors to help protect against moisture, dirt and corrosion.

**Q.** Simplest device for keeping undesirables out of plants is:
☐ Passes ☐ Lie detector
☐ Poison gas

**A.** Passes. Many war plants use passes wrapped with Permacel's companion, Texcel cellophane tape. Signatures, fingerprints, photos, are "sealed in"—cannot be altered without leaving tell-tale signs. Many other valuable documents can also be protected with this durable cellophane tape.

**Q.** Which of these types of pressure-sensitive tapes can help speed and improve *your* production?
☐ Paper ☐ Cloth ☐ Cellophane
☐ Metal ☐ Glass

**A.** All of these types of Permacel tapes are today used in war production. Many war uses will prove helpful in your business when you return to post-war work. Meantime, our research laboratory facilities are available to you for development of special tapes to meet war or post-war needs.

**Permacel**
**Industrial Tapes**
INDUSTRIAL TAPE CORPORATION
*New Brunswick, N. J.*
*Makers of* Texcel Tape

# HARDWOOD FINISHING HEADQUARTERS

SINCE 1888

## LACQUERS—

| | Gal. | ¼ Gal. | ⅛ Gal. | 1/16 Gal. |
|---|---|---|---|---|
| Brush Clear | | | | |
| Brush Colors | | | | |

14 Standard Shades, Also Black and White
(See Color Card)

| | 5 Gal. | 1 Gal. | ¼ Gal. |
|---|---|---|---|
| Metal Lacquers | | | |
| Transparent Musical Instruments | | | |
| Metal Lacquer Enamels | | | |

## SPRAY LACQUERS

| | Drums | 5 Gal. | 1 Gal. |
|---|---|---|---|
| Spray Flat Lacquers Trans. | | | |
| Gloss Lacquers Trans. | | | |
| Alcohol Proof Lacq. Trans. | | | |

| | Drums | 5 Gal. | 1 Gal. |
|---|---|---|---|
| Spray Lacquer Enamels | | | |
| Black Gloss Enamels | | | |
| Black (Rubber Finish) Enamels | | | |
| Black Flat Enamels | | | |
| White Gloss Enamels | | | |
| White Flat Enamels | | | |
| White Undercoat | | | |
| Colored, 32 Standard Shades | | | |

(Ask for Color Card)

## LACQUER PRIMERS AND SEALERS

Transparent Sealer ..... Drums....5 Gal....1 Gal.
White Pigmented Sealer..... Drums....5 Gal....1 Gal.

## LACQUER THINNER

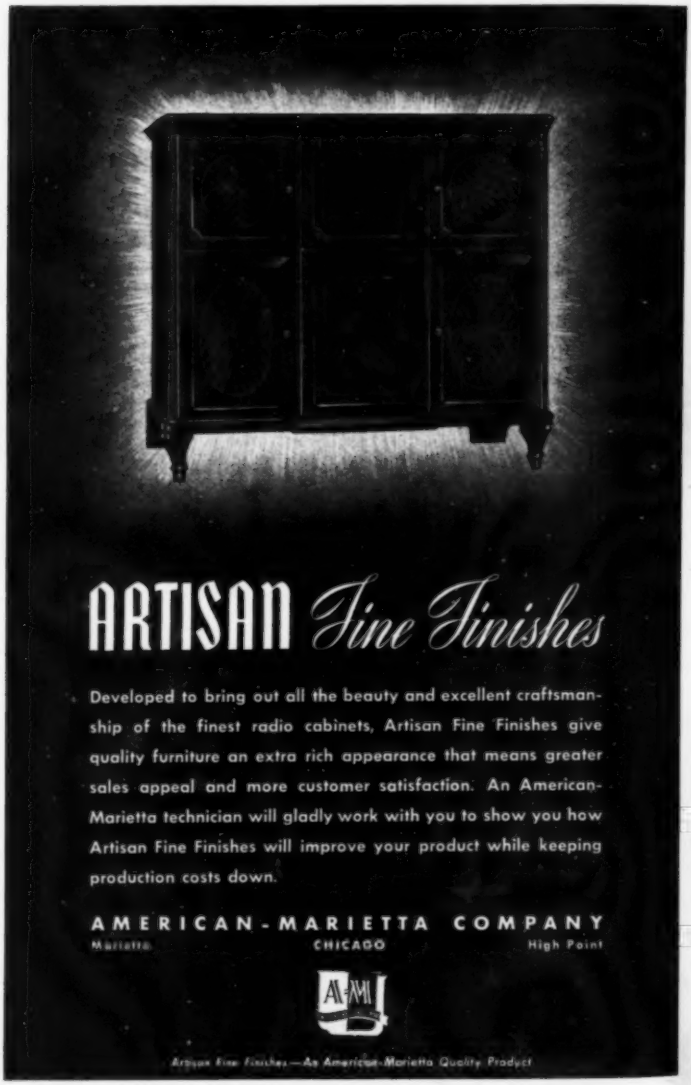
Spray AA ..... Drums....5 Gal....1 Gal.
Brush ..... Drums....5 Gal....1 Gal.

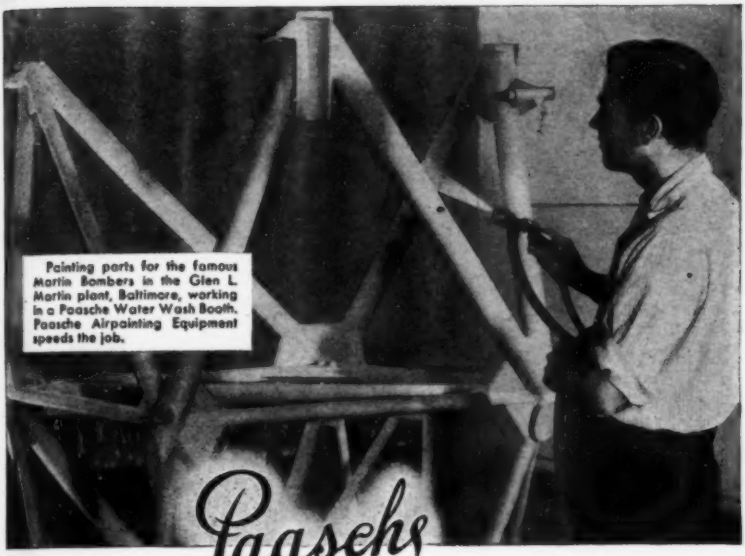
Lacquer Retarder ..... 5 Gal....1 Gal.
Lacquer Rubbing Comp....1 Gal....¼ Gal....⅛ Gal.
Lacquer Putty (White and Gray)..... 1 lb. Jars

Formulated
QUALATONE PRODUCTS
LABORATORIES

Illustrated catalogue of complete finishing materials that will take care of your finishing requirements.

**H. Behlen & Bro., Inc., 10 Christopher St., N. Y. C. 14**


ARTISAN Fine Finishes
Developed to bring out all the beauty and excellent craftsmanship of the finest radio cabinets, Artisan Fine Finishes give quality furniture an extra rich appearance that means greater sales appeal and more customer satisfaction. An American-Marietta technician will gladly work with you to show you how Artisan Fine Finishes will improve your product while keeping production costs down.
AMERICAN-MARIETTA COMPANY
Marietta CHICAGO High Point
Artisan Fine Finishes—An American-Marietta Quality Product



Painting parts for the famous Martin Bombers in the Glen L. Martin plant, Baltimore, working in a Paasche Water Wash Booth. Paasche Airpainting Equipment speeds the job.

# Paasche

# WATER WASH BOOTHS

## Conserve Paint • Add Production Hours • Reduce Fire Hazards • Promote Healthful Working Conditions

Paasche Water Wash Booths employ a constant curtain of water and the action of powerful sprays in a two-stage precipitation chamber, to wash down the overspray that otherwise accumulates on walls of booth, fans, piping, etc. Under proper conditions, the solids precipitated by this method can be reclaimed to make a substantial paint saving!

Further, Paasche Water Wash Booths eliminate time-wasting and hazards in spray-booth cleaning. They reduce fire danger to a minimum and are endorsed by safety engineers and industrial commissions. The clean, healthful working conditions they provide are an important factor in promoting favorable employee relations, and savings realized by the installation of Paasche Water Wash Booths quickly pay for the original investment.

Write for new Paasche Catalog. Gives full information on Water Wash Booths and other Manual and Automatic Airpainting Equipment. You'll want it for quick reference. **Address Paasche Airbrush Co., 1917 Diversey Parkway, Chicago 14, Illinois**

Paasche Airbrush (Canada), Ltd., 110 Elm Street, Toronto, Ontario.

Paasche AIRPAINTING EQUIPMENT

Manual, automatic and special airpainting equipment, airfinishing booths, pressure regulators, airconditioners for compressed air lines, air dusters and stripers.

*The story behind*

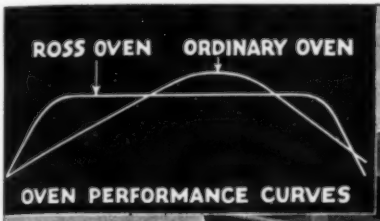
# PEDIGREE FINISHES

Send for this dramatic, pictorial description of the methods employed in formulating and producing finishes for YOUR requirements.

A beautiful, full-size book of intense interest to every finishing department foreman. Write today!

The PRODUCT WITH A PEDIGREE
THE P. D. GEORGE CO.

THE P. D. GEORGE CO.
SAINT LOUIS, U. S. A.




Note rapid uniform rise in temperature and flat curve of the ROSS OVEN as compared to the type of curve obtained with the ordinary oven.

# ROSS

*for Can, Pail and Steel Drum decorating*

## *HIGH SPEED*

# Metal Decorating Oven

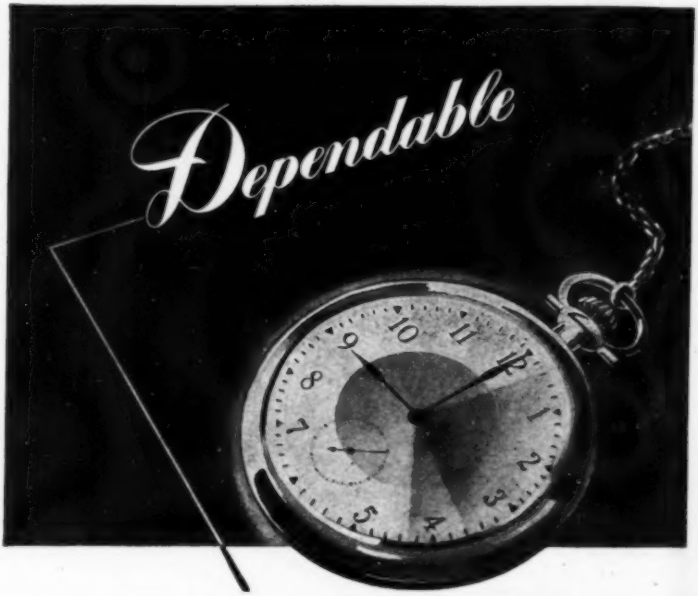
Its advanced design meets all the exacting requirements for automatic control, absolute uniformity of temperature across the sheet, maintaining any predetermined temperature curve throughout the length of the oven—no hot spots. Independent zones, each with its own circulating system and control, large volumes of air uniformly circulated throughout the oven, fast uniform adequate cooling—all combine to make this the outstanding oven for metal decorating. The facilities of our Laboratory are available for determining your particular conditions and requirements. Write us—no obligation.

## J. O ROSS ENGINEERING CORP.

350 MADISON AVE., NEW YORK 17, N. Y.

CHICAGO 6—201 N. Wells St. DETROIT 3—12953 Greeley Ave.

ROSS ENGINEERING OF CANADA, Limited—DOMINION SQUARE BUILDING, MONTREAL




IS THE WORD FOR

ARCO

PRODUCTION FINISHES

● A fine watch is one of the world's most accurate mechanisms, deserving of the confidence that is placed in it. Arco production finishes offer the same high degree of dependability. Every shipment matches specifications exactly, fulfilling—or even surpassing—the required performance characteristics. Specify Arco and you specify dependability.

Paints for Industry THE ARCO CO.

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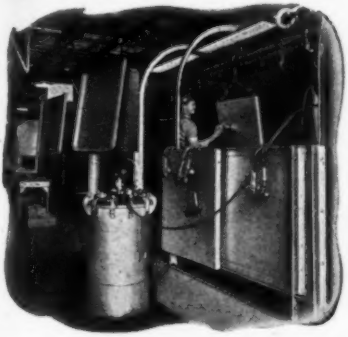

THE Hydro-Whirl principle combines the proved advantages of wet precipitation with a radical departure from the conventional design, thus is ideally suited for the collection and safe handling of practically all finely divided, linty and adhesive industrial dusts. It also answers the problem of precipitating pigments from the overspray in paint spraying operations.

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Spray painting a B-26 Marauder after complete assembly of the plane.

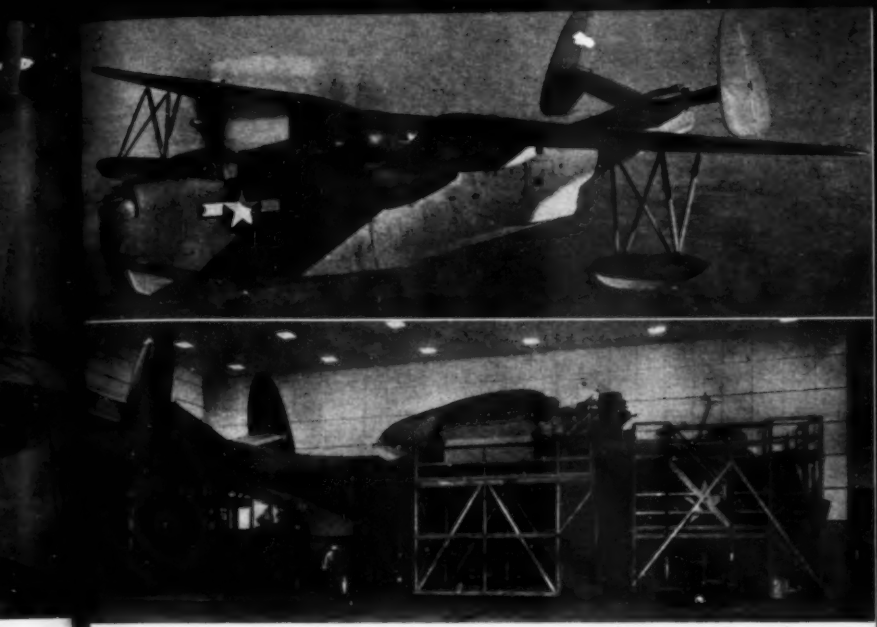
# Painting Bombers at

PRODUCTION of aircraft at the big Glenn L. Martin plant, Baltimore, Md., consists entirely of manufacturing bombers and some essential parts contained therein—including power-operated gun turrets which were developed by the Martin Company. At the time of my visit, about May 15 of this year, production operations were concentrated chiefly on medium and patrol bombers which are fast-flying, twin-engine aircraft. These planes are more than bombers. They have guns and other equipment of the latest type for use in a variety of effective military operations against the enemy.

Bombers are being built for both the U. S. Army and U. S. Navy—the B-26 Marauder medium bomber for the Army, and PBM Mariner patrol bomber for the Navy. Both types of aircraft are beautifully streamlined ships.

**B-26 Paint Jobs**

When you see a completed B-26 ready to take off from the company's long runway you may see a plane painted all over in olive drab, or painted only on top, or with no paint at all on its brightly polished aluminum skin, except for the U.S. Air Forces' emblem and the identification numbers and lettering. The interior structure,



Top view: PBM-3 in flight. Bottom: PBM-3 in spray painting booth.

# at Glenn L. Martin Plant

BY W. H. ROHR

☆ ☆

including all parts and sub-assemblies, is painted for protection against corrosion and exposure to whatever type of wear and service may be encountered during its useful life. B-26s that leave without an exterior paint coating may be painted upon arrival at their destination, to suit the tactical requirements or preference of the Army command that receives them. In North Africa they received a desert-sand coating.

### The Color Scheme for PBM-3 Mariners

All of the flying boats — the PBM-3 Mariners—are painted on the outside as well as the inside. Their field of operations is chiefly over the water. They take off and come to rest on the water, therefore it is essential that their metallic skins are well covered with a dependable protective coating at all times. Most of the PBMs I saw were painted blue-grey over the top and upper sides, and white underneath and along the lower sides, reminding you of a giant sea gull. Where the blue meets the white, there is no sharply de-

fined line, but rather a gradual and easy natural blending of one color into the other.

A few of these planes, bound for a special locality, were painted all over in an off-white cream color. All of them carry the national insignia. This is a stencil spray job, applied after complete assembly and the over-all spray painting of bodies, wings and floats.

### Metal Surface Preparation Previous to Painting

Highlights of some of the surface preparation and painting operations, as observed in a trip through Plant 1 and the Army Division at Baltimore, are as follows:

In one room, on a raised platform, five or six long dip tanks are arranged side by side, with maintenance working space between tanks. Overhead is a traveling crossbeam which carries the motor-driven cable hoists. Control cables for the operator hang at one end of the traveling crossbeam. The arrangement is such that sheet aluminum parts for airplane construction, hanging from racks or suspended in baskets, are moved by this traveling hoist, lowered into a tank, lifted out and moved to another tank where the operation is repeated. It all works smoothly, easily, safely and with exacting precision. In fact, a young lady operates it.

Tank No. 1 contains a metal cleaning solution which is maintained at a temperature of 180° F. No. 2 is a hot water rinse tank; No. 3 tank is the chromic acid dip where an electrolytic process, providing an oxide film to the aluminum, is given; No. 4 is another rinse tank, and No. 5 is an electric drier having no liquid contents. This cleaning and surface treatment prepares the metal for its initial coat of zinc chromate primer.

Infeed end of one of the automatic spray painting machines. Here large or medium size flat work, small pieces or even trays of small articles can be placed on the crossbar conveyor which passes under moving spray guns.

### Conveyorized Automatic Spraying Machine

Treated metal parts are moved by the conveyor into an adjoining room where they are spray painted with zinc chromate primer. The most spectacular equipment in this room is a dual automatic spray machine wherein sets of spray guns, pointing straight down, are mounted in such a way that they travel back and forth horizontally above a crossbar conveyor which is loaded with flat and formed aircraft parts. As the coated parts move past the set of

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Humid, rainy summer months are rust months and play havoc with metal production. Vital supplies of war materials are delayed — at times stopped.

Rust bottlenecks no longer need occur to hamper production. Peroline and Deoxidine will eradicate and prevent rust, making these stoppages or delays unnecessary either in rainy seasons or at other times. Peroline (a combined chemical and oil) not only effectively retards corrosion on steel components in processing, in storage and in transit, but—it dissolves blushes of rust, eliminating the labor of a separate cleaning operation. There is a grade of Peroline for application to wet surfaces as well as grades for application to dry metal. Peroline is unique in its ability to clean and, when the oil phase is removed with degreasing solvents, to leave the surface properly conditioned for painting.

**Surface Badly Rusted.** If in processing, surfaces have become badly rusted, Deoxidine provides a fast and easy means for removing and eradicating rust and rust stimulators, leaving a surface properly prepared for painting.

If you are experiencing rust troubles, the ACP technical department will gladly consult with you and recommend the method best suited to correct and prevent future rust annoyance.

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B-8

spray guns they enter and pass through an infra-red drying tunnel and continue forward for some distance to the end of the first crossbar conveyor line. At this point they are turned over and transferred to another crossbar conveyor which is located alongside the first one but which travels in the opposite direction. The second conveyorized spraying-drying line is a duplicate of the first one.

This automatic equipment takes care of spraying both sides of parts efficiently, quickly and with few operators. The waterfall exhaust system is so efficient that no waste spray or paint fumes are in evidence. Waste spray particles are collected in tanks of water and disposed of at regular intervals. The spray guns are supplied with zinc chromate primer from large portable pressure containers. When a fast air-drying zinc chromate primer is being sprayed, as was the case at the time of my visit, the infra-red drying lamps are turned off because they are not needed. The speed of the crossbar conveyors is so timed with the horizontal travel of the spray guns, and vice versa, that all parts riding along on the conveyor are completely and uniformly coated.

### Small Parts On Trays Are Hand Sprayed

Supplementing this large-capacity automatic sprayer are three or four spray booths positioned side by side and supplied by a paint-circulating system. Here is where many small parts are sprayed with hand-operated guns. The small parts are placed on wire mesh trays of convenient size and loaded into portable multiple-deck racks. These portable racks, loaded with trays of small parts, are moved to the spray booths and spotted along a line in front of the booths where they are within convenient reach of the spray operator. Like the larger parts sprayed on the automatic machine, these small parts must be spray-painted on both sides. This requires that they be turned over after the first spraying, so they can receive a spray coat on the other side. Larger size parts can be sprayed in these spray booths too, if or when it is desirable.

So much for the application of zinc chromate primer—that necessary corrosion-resistant protective coating — on certain parts (practically all metal parts) before assembly.

### Painting the Outsides of Assembled PBM-3s

Painting the outsides of PBM-3 Mariners in the big room, in front of a giant curtain of waterfall, is a sight that makes the men working high in the air look like dwarfs. Look at the picture of one of those gull-winged Mariners. To make room for working and

After certain parts have traveled through the conveyorized spray painting machine and through an infra-red drying tunnel this young lady marks them with a rubber stamp.

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Prep Products have been established nationally for years in the metal treating and finishing field. They have been used extensively on automobiles, refrigerators and hundreds of other articles. They have also been applied to Government work to meet the strict regulations and inspection in connection with war products. Now we are extending their use to the aircraft field and call your attention particularly to our latest perfected product, ALUMIPREP, for treating aluminum preparatory to spot welding and painting.

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probably due to other considerations, those giants are painted before the extended level wings are attached. Each plane is cradled in a large portable fixture that has platforms at different levels, each platform being reached by an open built-in stairway which is part of the fixture.

The spray operators work from long lines of hose connected to compressed air lines and to large portable material containers on the floor. As many as four of the huge flying boats can be painted at one time in the after-assembly paint room. Wings are painted separately before being attached to the wing shoulders or stubs which extend out at an upward angle from the body of the plane. The exterior paint job includes a zinc chromate primer to which is added one or more color coats of synthetic material.

Thus the protective coatings for these high-powered airplanes are prepared and applied. The fully camouflaged B-26 paint job weighs 58-lbs. or about one-sixth of 1% of the total weight of the Marauder, as it goes into combat with bombs, crew and fuel. The PMB's paint weighs 215-lbs., or about one-third of 1% of the combat gross load. The Mars, world's largest flying boat (150,000-lbs.) has 440-lbs. of paint. Therefore, it can be seen how little the weight of paint affects these aircraft, despite the important part it plays in keeping the all-important aluminum metal sound and adequately protected. *(To page 30)*

Left—Spraying a formed aircraft part (airfoil slat) that is resting on a wire mesh or expanded metal tray which, in turn, is supported by the turntable in a waterwash spray booth.

Below—Here girls are placing small formed parts (clip headings) on trays so the parts can be quickly sprayed with a protective coating later.

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How do these paint jobs stand up to the severe service at the battle fronts? Well here is something interesting on this subject from a war correspondent's story, printed in an issue of the Glenn L. Martin Co.'s plant newspaper:

**Original B-26 Paint Job Lasted Through 100 Missions**

Nameless for 44 missions, the B-26 "Mild and Bitter" inscribed its name for all eternity in the roll of honor of great airplanes by becoming the first American bomber in the English theater, the war's "Big League," to complete 100 missions.

Most girls make up 100 times for 100 dates to start with and then add repairs as their mission wears on. But "Mild and Bitter" is different. Her original paint job lasted out 100 dates with the enemy.

Many of us think of a veteran aircraft as a pathetic, battered, lumbering old plane, struggling to keep up with the younger ones. But that's not true of "Mild and Bitter." "She might be a couple of miles slower than a new ship," said Sgt. Stuart, her crew chief, "but that's only because of her paint job. It's getting kind of rough, causing more air resistance. It's still the original paint job she had when she first came over. We thought about painting her again, but we decided she looks better this way."

The silver beneath the olive drab paint is beginning to show in many spots. Once the paint gets knocked off in one place it begins to spread, Sgt. Stuart explained.

The two 2000-hp. Pratt and Whitney engines are the same ones this Marauder had at the beginning. They are still operating after flying more than 440 hours (300 in combat), covering 58,000 miles, and consuming 85,000 gallons of gasoline. It never made a single-engine return and has only had minor engine adjustments.

## Salvaging Overspray in Production

USE OF A miniature "Niagara Falls" to carry off excess paint from spray guns has enabled Willys-Overland Motors to salvage 75,000 gallons of enamel —enough to paint 30,000 "Jeeps" —it was announced recently by the operations manager of the company.

This technique is returning 6000 gallons of reclaimed enamel monthly, or enough to paint 2400 scout cars, since one-half gallon of red primer and about two gallons of olive drab are required to give the Jeep its battle "make-up".

Each Jeep is painted by passing along on a chain conveyor, between manually-operated spray guns and the waterfall. The falling water catches the excess paint spray and carries it into a wash system where it is removed from the top of the water and sent to chemical laboratories for re-processing. The recovered paint sludge also contains vital and critical war materials, such as fats, oils, glycerine and phthalic anhydride.

### *Receives Army-Navy Award for Third Time*

The Thresher Varnish Co., 1100 E. Monument Ave., Dayton, Ohio, was notified in June that it had won, for the third time, the Army-Navy Production Award. This second renewal added a second White Star to the company's Army-Navy Production Award flag—an inspiring example for other Americans on the Production front.

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# *Reconversion Problems*
# —LACQUER MAY SOLVE YOURS

*BY GEORGE OUTCALT*

**One of many angles to various reconversion problems which will face industrial users of finishing materials as the war begins to end and when more civilian products can be made.**

RECENT WPB orders permitting the manufacture of certain civilian items bring to a head the problem of how you are going to finish these products. It is generally believed that when Germany surrenders, large scale conversion will begin. But does that mean that synthetic resins now on allocation will be available immediately for civilian use? People who should know do not expect to have unlimited use of alkyd resins (for high-quality bake finishing) until after Japan is beaten.

Since January of this year phthalic anhydride, which is the critical chemical used in the manufacture of synthetic resins, has not been allowed for over 90% of the non-military articles which have continued to be made during the war. As a substitute, oil-base enamels have been tried. No one, to my knowledge, has been satisfied with the results obtained. Whites do not stay white; and the enamel films, whether air-dried or baked, have a surface hardness but are not hard enough underneath.

### Conditions Similar to When Lacquer First Appeared

In some respects we of the finishing industry are back to the same place we were in 1923 when high-solid lacquers first made their appearance on the market. Then we had bad marring conditions. Today we have the same thing. Then we had slow production schedules which were acceptable because, up to the advent of lacquer finishes, there was no way of doing the job any faster. Today we have fast production schedules based on continuous ovens geared to present-day production schedules. Oil-base enamels just don't fit into these fast schedules.

Lacquer found its place as a production finish 20 years ago because of its greater speed in drying, plus its durability. Alkyd resins were first manufactured in 1926 and found their way into the paint industry in 1931. With synthetic enamels, one coat did the work of two or more coats of lacquer. Eventually many manufacturers adopted synthetics and spent money for drying ovens. With synthetics improved, flexibility and better gloss were obtained. By 1938, excellent one-coat short-bake enamels were offered to the trade. Baking schedules were cut from one hour to 15 minutes by the use of these materials.

When the war stopped civilian production, we were geared up to baking schedules of 15 minutes, or to a finish that would dry nail

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hard overnight at room temperatures. Oil-base enamels just don't give those results. So what is the answer?

Where conveyor ovens are used, it is practically impossible to slow down the conveyor speed sufficiently to bake out an oil enamel hard enough to eliminate danger of printing. One manufacturer has increased his time in the oven 50% by slowing down the conveyor speed. He keeps his spraymen on the job 12 hours to turn out work that was formerly done better in eight hours. Today this company's production is not high, but it anticipates a 50% increase in production the last half of the year, which will mean two shifts in the paint shop.

**Isn't Lacquer Your Answer—Temporarily?**

Isn't lacquer the answer—until we get alkyd resins back? I think so. Even if new baking equipment could be had, everyone knows that some day we will have the same materials (pre-war synthetic baking enamels) or better ones to use. Then we can resume our faster baking schedules with the equipment we now have—or with what we may add for baking the synthetic enamels which, eventually, will be available without restrictions.

The gloss of a lacquer enamel isn't as high as that of a synthetic or oil-base enamel. But as far as durability is concerned it is my observation and experience that lacquers are ahead of an oil-base material. The hardness of lacquers is superior to that of any wartime oil-base enamels that I know of.

Today lacquer enamels can be made that will adhere to metal without the use of primer coats. In order to obtain good looking finishes that have depth and luster, at least two full coats are needed, but these coats can be applied practically one on top of the other. You must have clean and reasonably smooth metal surfaces on which to apply lacquer. There should be no evidence of grinding marks on the surface. If your metal does have grinding marks, either smooth them out with fine sanding or cover them up with lacquer filler coats.

Ingredients for making nitrocellulose lacquers should be much freer for civilian production — or maybe it would be better to say that lacquer ingredients will be available first — after the cessation of hostilities. In making your plans for resumption of civilian production, I suggest that you keep your mind open to the possibilities of lacquer. It may serve you well. It did in the past.

In conclusion I might add that many lacquers now made of substitute materials are giving good results.

---

## Piped Paint Materials in Small Plant

I HAVE always disliked to see two or three pressure tanks standing in front of or at one side of a spray booth, with the almost untangleable network of hose, and the floor looking like a cobblestone road of all colors from spilled materials. Sometimes the pressure tanks are hardly recognizable through the amount of old material spilled on them when they were being filled, and the caked material all over the hose. Certainly not a very clean sight for a trade that has to turn out such clean work.

Some time ago our company de-

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cided to add a few new spray booths. These booths were to use the same materials as the old ones already in service. Now our work requires a number of different types of finishing materials of various sheens. Five spray booths with pressure tanks, hose and guns —to use not less than four kinds of material—would mean 20 tanks, 20 guns and material hose, with hose to each gun, air hose to the tanks, etc. This would mean not only hundreds of dollars worth of new equipment but, in time, all the mess in front of the new booths.

After some investigation we installed a paint-circulating system wherein the materials are piped from a central mixing room to each spray station, like gas to your wife's gas range, and water to your drinking fountain. We use only one gun at each station to spray any one of five kinds of lacquer—high gloss, flat, semi-gloss, sealer and a walnut-colored gloss lacquer. (Our walnut coloring is very light and is used only as a blending agent over stained pieces.)

We kept our old pressure tanks for use in emergencies and for any special material not generally used on the production line. The installation has worked satisfactorily with a variety of materials.

I have never had the least trouble with clogged lines, even with highly stearated flats and sealers, as no material is ever put into the mixing tanks without being strained through a fine mesh strainer; and all lines are blown back each night.—H. E.

---

Picric acid, one of the standbys for years in wood staining, was brought out in 1788. It is known to chemists as 2, 4, 6-tri-nitrophenol and is an important high explosive.

Speakers at the "E" Award ceremonies of Industrial Tape Corp., at New Brunswick, N. J., included (left to right) Lt. Colonel W. L. Purcell, Army Air Corps, G. F. Smith, President of the company, Anthony J. Sarka, Jr., who spoke for the employees, J. S. Nicholls, Jr., Executive Vice-President of the company, and Commander W. W. Slocum, U.S.N.R.

# *Wrestling with a finishing problem*

**ON WAR MATERIALS**
**CIVILIAN SUPPLIES**
**POST-WAR DEVELOPMENTS**

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Franklin Murphy's policy of supplying what might be termed a "tailor-made" finish to meet the special needs of a given product has been followed to this day. And it has resulted in a line of Murphy finishes that meet a truly astonishing variety of requirements.

When the war came, we were, therefore, in a position to get into action pronto. In a matter of weeks, our finishes were going on airplanes, shell containers, searchlights, sound detecting devices, range-finders, etc. And as the tempo of American production for war mounts, more and more products are being *Murphy protected.*

You'll find that our broad peace-time experience, coupled with our intimate knowledge of war-time finishing needs, can be of real service to you—on war work, civilian supplies, or POST-WAR development.

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**Cleaning, Surface Treating and Protectively Coating That New, Lightest Metal—**

# Magnesium

**BY G. C. CLOSE**

A VARIETY of surface treatments have been developed for use with magnesium alloys. In the majority of cases the major function of the coating formed will be to inhibit corrosion and facilitate painting. A few surface treatments have been developed specifically for decorative purposes. However, the use of the decorative treatments without additional finish coats should be confined to products that will not meet with severely corrosive conditions during service life.

Any surface treatment applied to magnesium alloys for corrosion prevention purposes should achieve three definite objectives: 1) the protective coating formed should bond well with the base metal; 2) the treated surface should offer adequate mechanical anchorage for subsequent primer or paint coats; 3) it should definitely inhibit corrosion. Selection of the proper method of surface treatment will depend upon the medium of subsequent use, and the alloy involved.

Most magnesium alloys are furnished in the chrome-pickled surface treated condition. The purpose of this initial coating is to protect the alloys during shipment and storage. This initial coating will be removed by the strong alkaline cleaners recommended for use with magnesium subsequent to fabrication. Re-treating over treated surfaces is not recommended as it will usually result in a film of unequal appearance and doubtful protective value.

Many of the chemicals employed in surface treating magnesium are definitely hazardous to operating personnel. Solutions containing caustic soda, arseneous oxide, sodium dichromate; or nitric, sulphuric, or hydrofluoric acid should be handled with care. State and Federal health regulations should be carefully observed.

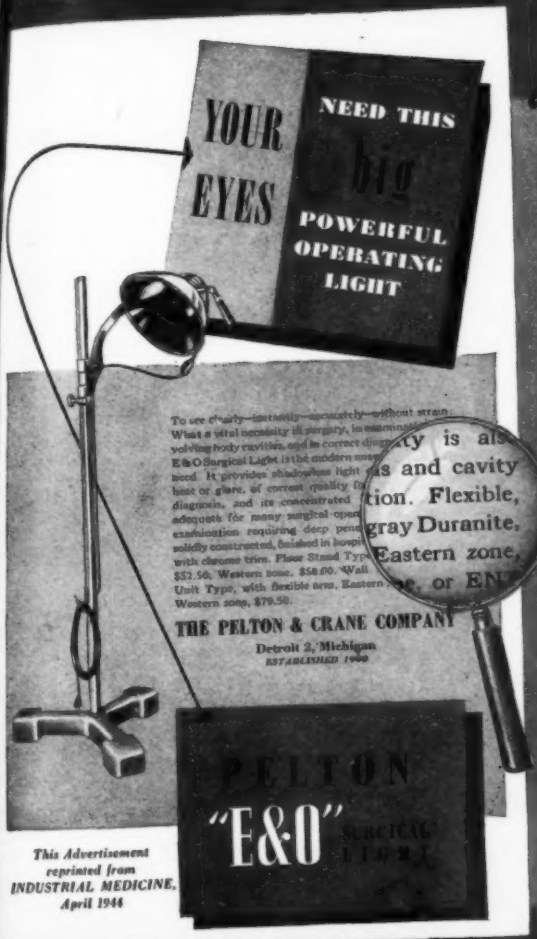
### Chrome-Pickle Treatment

The chrome-pickle surface treatment of magnesium is more widely employed than any other method. It is applicable to all of the magnesium alloys, and produces a slightly etched surface well

---

**Part 2 of a two-part article wherein the author reveals practical information about the cleaning, surface treating and protective coating of magnesium, which has come into such extensive use in the aircraft industry because it is a very light weight metal of remarkable strength**

# ZAPON DURANITES IN USE...




*This Advertisement reprinted from INDUSTRIAL MEDICINE, April 1946*

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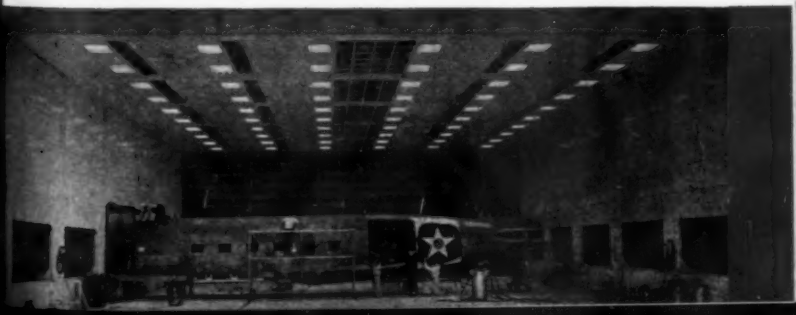
## EEPING FINISHING AHEAD OF ACCELERATING PRODUCTION

There are new spray painting techniques and equipment to keep finishing departments abreast of the whirlwind speeds being developed in America's great war industries. New products, made by new methods, are getting new finishes at speeds that were never heard of before the war. Both manual and automatic finishing has been stepped up to the vast scale of war production. As in peacetime, Binks Engineers have been prominent in these wartime developments. They have developed special equipment for finishing shells, bombs, tanks, jeeps and the vast amount of other equipment needed to win the war. The large manual finishing department shown above and the giant water wash spray booth shown below were both designed and equipped by Binks for one of the largest aircraft manufacturers in the country. There is a Binks Engineer in your territory now. He will be glad to show you how to keep your finishing abreast of new production speeds.



adapted to receiving subsequent paint coatings. This treatment is surpassed only by the acid dichromate treatment and the Galvanic anodic treatment in affording protection from sea atmosphere or salt water solutions.

The principal disadvantage of the chrome-pickle treatment is that the etching action of the solution removes approximately .0006-in. of base metal per surface (.0012-in. per diameter). Hence treatment of machined surfaces is limited to work of non-critical tolerance, or to parts where adequate allowance for metal removal has been made.

The chrome-pickle treatment is a simple dip operation in a solution of the following composition:

| | |
|---|---|
| Sodium dichromate ($Na_2Cr_2O_7.2H_2O$) | (lbs.) 1.5 |
| Conc. nitric acid | (pints) 1.5 |
| Water to make | one gallon |

The chemicals employed may be of commercial grade. The solution is used at room temperature (70° to 90°F.) and the time of immersion will vary between ½ and 2 minutes, depending upon the freshness of the bath. The one exception to this time-temperature cycle is in the treatment of die castings. Die castings should be given a 10-second immersion at approximately 120°F. Longer immersion at a lower temperature will result in an excess of powdery deposit on the die-cast material.

Treated parts, upon removal, should be suspended above the solution and allowed to drain for five seconds. This will result in better color characteristics than if the parts are plunged immediately into rinse water, with no time for the adherent solution to drain off. Initial rinsing should be in cold water, followed by a dip into hot water to facilitate drying.

**Produces Color, Luster and Microscopic Etch on Surface**

The chrome-pickle treatment produces a visible color, a luster ranging from bright to matte, and a microscopic etch on the surface of the work. These characteristics will vary, depending upon the age of the solution and upon the composition and degree of heat treatment of the alloy involved.

A gray to a yellow-red iridescent coating indicates optimum results. Such colors are easily obtained with fresh solutions. Depletion of the solution, however, will require more care in handling to obtain just the right degree of treatment. Coatings of a bright or brassy appearance indicate excessive deterioration of the solution, and will afford inferior protection and bond. When such colors are consistently obtained, replenishment of the solution is required. If laboratory facilities are available, a daily or semi-weekly check of solution strength should be made and chemicals added accordingly. Without the facilities of a laboratory, the operator will have to judge from the appearance of the work when rejuvenation is required.

Parts too large for tank immersion may be chrome-pickled by brushing generously with the solution. The brush application should be followed immediately by a complete washing with clean water. Though the coating produced in this manner will be of less uniform appearance than that obtained by tank immersion, protective and bonding results will be equally effective.

Steel and brass are not affected by the Chrome-pickle solution, hence parts containing bushings or inserts of these metals may be safely treated. Pure aluminum,

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Because it contains wax, Johnson's Wax-O-Namel provides an attractive appearance *plus* long-lasting protection. Wax-O-Namel gives a hard, uniform finish that resists scuffs and scratches, and makes surfaces easier to clean. Wax-O-Namel can be baked in conventional ovens or infra-red curing banks. It can be applied by spray or dip methods.

Why don't you investigate Johnson's Wax-O-Namel now, and find out if it can help solve *your* finishing problems. Write for the full facts.

***TODAY*** Wax-O-Namel provides extra protection for war equipment.

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**S. C. JOHNSON & SON, INC.**
**PRODUCT FINISHES DIVISION**
**Department IF-84**
**Racine, Wis.**

glass or ceramic tanks are recommended for containing the chrome-pickle solution.

**Sealed Chrome-Pickle**

Increased protection of magnesium alloys, and especially the die-cast alloys, may be obtained by application of the sealed chrome-pickle treatment. After chrome-pickling as described previously, the parts are immersed for 30 minutes in a solution containing one to 2-lbs. of potassium, sodium, or ammonium dichromate per gallon of water. Chromic acid is added to adjust the pH of the solution to approximately 4.0 to 4.4. Solution is used at room temperature.

The color of parts treated in this manner should be a matte iridescent finish with yellow and red shades predominating. Bright yellow coatings indicate an excess of acid. This condition may be rectified by adding more dichromate to the solution.

**Acid-Dichromate Treatment, A 2-Solution Treatment**

The acid-dichromate treatment for magnesium is widely employed when the metal will be exposed to sea atmosphere or salt water. This is a "2-solution" treatment, and produces a coating somewhat less hard and abrasion resistant than the chrome-pickle treatment previously described. The color of the treated metal will vary between dark brown and black, depending upon the time of immersion, condition of the solution, and composition of the alloy. This treatment produces no dimensional change in the part involved.

Brass, bronze, and steel are not affected by the acid dichromate solutions. Conversely aluminum and cadmium plating are readily attacked. Magnesium alloys with a high manganese content, such as Dowmetal M or Mazlo AM3S, are not adaptable to the acid-dichromate treatment.

All work should be cleaned thoroughly and pickled prior to treatment. The initial bath is composed as follows:

| | |
|---|---|
| Hydrofluoric acid (48% to 52%) | 1 |
| Water | (parts by vol.) 2 |

Immerse work for five minutes at room temperature (70° to 90°F.). Rinse in cold water after removal.

The second bath is a 10% sodium dichromate solution composed of ¾-lbs. of sodium dichromate per gallon of water. The pH of this solution should be maintained between 4.5 and 5.5 by additions of a 10% solution of chromic acid. The work is boiled in this bath for 45 minutes, then removed and rinsed in cold water. A hot water dip should follow the cold rinse to facilitate drying.

The hydrofluoric acid bath is slowly depleted by constant use. The hydrofluoric acid content of the bath should not be allowed to drop below 10% or severe etching of the parts treated will result.

When using the acid dichromate treatment, extreme care should be exercised in handling the hydrofluoric solution. Stubborn and painful burns will result from contact with this acid, regardless of concentration. If any is accidentally spilled on the flesh, wash the splashed area for a prolonged period with cold water. If pain or redness persists after washing, consult a physician immediately.

Lead tanks are recommended for the hydrofluoric solution.

**Alkaline Dichromate**

Alkaline-dichromate treatment is a modification of the acid-dichromate treatment and will produce a harder, more abrasion-resistant

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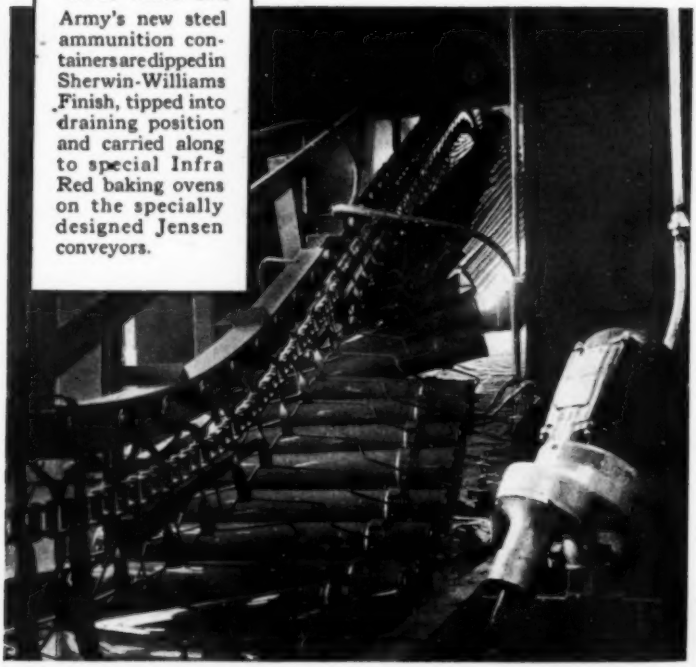
# A TOUGH CASE

## . . . and how SHERWIN-Gunn Furniture

**ON THE "FINISH" LINE**

Army's new steel ammunition containers are dipped in Sherwin-Williams Finish, tipped into draining position and carried along to special Infra Red baking ovens on the specially designed Jensen conveyors.



## SHERWIN-WILLIAMS

# TO COVER

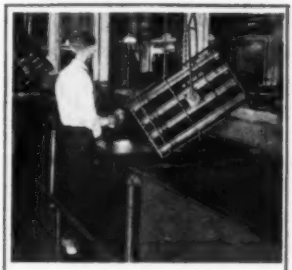
## WILLIAMS helped Co. solve the problem!

BECAUSE containers previously used failed to prevent heavy artillery shells from mildew, the Army recently switched to steel. Asked to rush production, manufacturers found *mass-production finishing* threatened to be a serious bottleneck. The problem called for action, and one of the more than 30 participating plants — Gunn Furniture Company of Grand Rapids — called in Sherwin-Williams.

Sherwin-Williams technical men went to work — developed a finish that met the specifications of Army Ordnance on all factors and, in collaboration with Jensen Specialties Inc., Detroit, Mich., evolved a dipping technique that did the job 100%! *Sherwin-Williams materials and the basic system developed for Gunn are now being employed by a majority of the manufacturers participating in this program.*

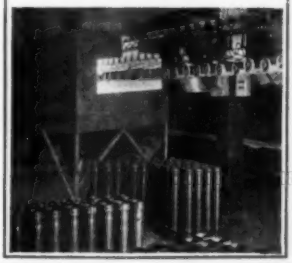
Gunn Furniture Company's experience is typical of the results to be expected when Sherwin-Williams is called in. The knowledge and cooperation of Sherwin-Williams technical men are at your disposal. The Sherwin-Williams Co., Cleveland 1, Ohio.

**INDUSTRIAL FINISHES**



**STARTING POINT** of the coating operation. Alkalizing, bonderizing and neutralizing baths.

**THE HEAT IS ON** containers emerging from Infra Red oven at Gunn Furniture Company after coating with S-W Finish.



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coating. Salt water resistance to corrosion is good. When machined parts are received with an initial surface treatment that cannot be removed without affecting dimensional tolerance, the alkaline dichromate treatment may be applied over this initial treatment with good results.

Brass, bronze, and steel are resistant to the alkaline dichromate solutions, but cadmium plating or aluminum are quickly attacked. Here again Dowmetal M and Mazlo AM3S are not adaptable.

The first solution employed is the alkaline-dichromate process which is identical to the hydrofluoric solution described for the acid-dichromate treatment. After the hydrofluoric dip, the work is immersed for 45 minutes in a boiling solution of the following composition:

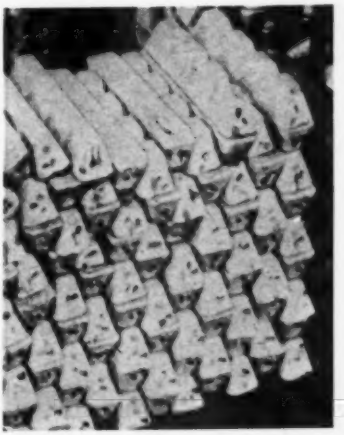
| | |
|---|---|
| Ammonium sulphate ($NH_4SO_4$) | 4 |
| Sodium dichromate (oz. per gallon) ($Na_2Cr_2O_7.2H_2O$) | 4 |
| Ammonia (Sp.Gr. 0.880) (fluid oz. per gal.) | 1/3 |
| Water to make | one gallon |

Maintain the pH of the solution between 5.6 and 6.2 by adding when required a solution containing 5% each of concentrated sulphuric acid ($H_2SO_4$) and chromic acid ($CrO_3$).

After removal of the work from this second solution, rinse thoroughly in cold water; then boil for five minutes in a 1-oz. per gallon solution of arseneous oxide. This should be followed by a cold water rinse and hot water dip to facilitate drying. The arseneous oxide solution is relatively cheap and should be discarded and replaced at least once a month.

### "Galvanic Anodize" Treatment

The galvanic anodic treatment of magnesium employs solutions identical with those used for the alkaline dichromate treatment, with the exception that the arseneous oxide boil is eliminated. This treatment is recommended for the high manganese alloys such as Dowmetal M or Mazlo AM3S.



Magnesium alloy ingots in storage. Huge amounts of magnesium will be available for commercial use after the war.

The coating produced is highly resistant to salt water, and affords a superior bonding surface for subsequent coats of organic finish. Dimensions are not materially affected, and machine parts may be treated with safety. Brass, bronze, steel, and cadmium plate are immune to attack by the solutions, but aluminum is attacked rapidly by hydrofluoric acid dip.

The galvanic anodic treatment consists of two definite steps after prior cleaning. First is immersion in the hydrofluoric bath described under acid dichromate treatment with subsequent rinse, then immersion in the ammonium sulphate-sodium dichromate bath described under alkaline dichromate treatment. In this second bath,

however, the work is made the anode of an electrolytic circuit and is treated for approximately 30 minutes at a temperature of 120° to 140°F.

A minimum current density of 2-amps. per sq.ft. should be maintained at all times during treatment, and should not in any case exceed 10-amps. per sq.-ft. A rheostat should be provided for controlling the current flow. The color of the finished coating will vary between dark green and black.

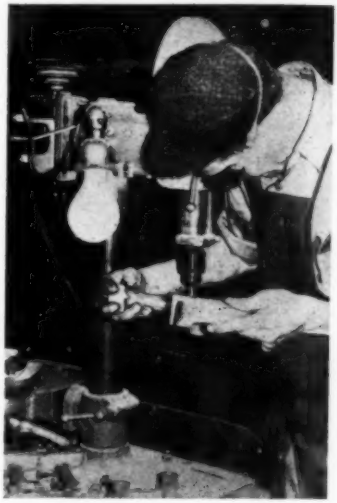
The pH of the galvanic anodic solution should be maintained between 5.6 and 6.2 by adding a solution containing 5% each of the concentrated sulphuric acid ($H_2SO_4$) and chromic acid ($CrO_3$) as required.

### Anodic Treatment

The anodic, or more commonly termed "PT-13d" treatment for magnesium is applied only to the alloys containing 6% aluminum, 3% zinc and 2% manganese. These alloys are represented by Dowmetal H and Mazlo AM265. Due to lack of space, this treatment will not be covered here, but full instructions for its use are to be found in Navy Specification PT-13d, available from the Bureau of Aeronautics, Navy Dept., Washington, D. C.

### Organic Finishes; Prime Coat

It has been definitely established that surface treatment only of the magnesium alloys will not offer adequate protection when severely corrosive conditions are encountered during service life. This makes necessary the application of an organic finish. The organic finish system consists usually of a prime coat followed by one, two, or three finish coats as anticipated conditions warrant.



Drilling bomber control wheels of cast magnesium. After such operations, magnesium must be resurface treated to provide a uniform corrosion-resistant surface coating.

Either air-drying or baked primers have proved their effectiveness. Of the air-drying type, zinc chromate is the most widely used. However, other recommended primers are available from the larger paint makers.

Baked zinc chromate primer has also proved effective, as has red oxide. Any primer used should exhibit good adhesion, and above all good moisture-resisting qualities. It is strongly recommended that if a large production schedule is anticipated, test panels painted with several types of primers be exposed for a period to conditions similar to those which the part or products will encounter during service life.

The requirements of the finish coating material for magnesium

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# The case of t i

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The Du Pont Service Man rechecke all the usual causes of flatting, withou success. However, his wide experienc and special training had made hi aware of some less common source

of troub was bein two floo There w

He kn the appe could th the enam room? W he disco by fans i fumes up shafts, ri sprayed. ing door were sto

BE

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# ...e insidious acid fumes

## How the Du Pont War Service Man prescribed an antidote for a gloss finish that went flat

of trouble. He discovered that acid was being used in a plating operation two floors below the finishing room. There was a clue.

He knew that acid fumes would affect the appearance of a finish. But how could the acid on the first floor "flat" the enamel in the third floor finishing room? With the aid of a smoke gun, he discovered that air currents, created by fans in the spray booths, drew acid fumes up the fire towers and elevator shafts, right across the products being sprayed. The rest was simple. By closing doors on the two floors, the drafts were stopped. The mystery of the frosted finish was solved and production went on unhindered.

It was easy enough to provide the cure. But to make the diagnosis called for wide experience and more than the usual finishing knowledge. The Du Pont Service Man had both. There's a Du Pont man near you who will be glad to consult with you on your own particular problems. He has many years of experience in analyzing various finishing "mysteries" that you will find very helpful. Write to:

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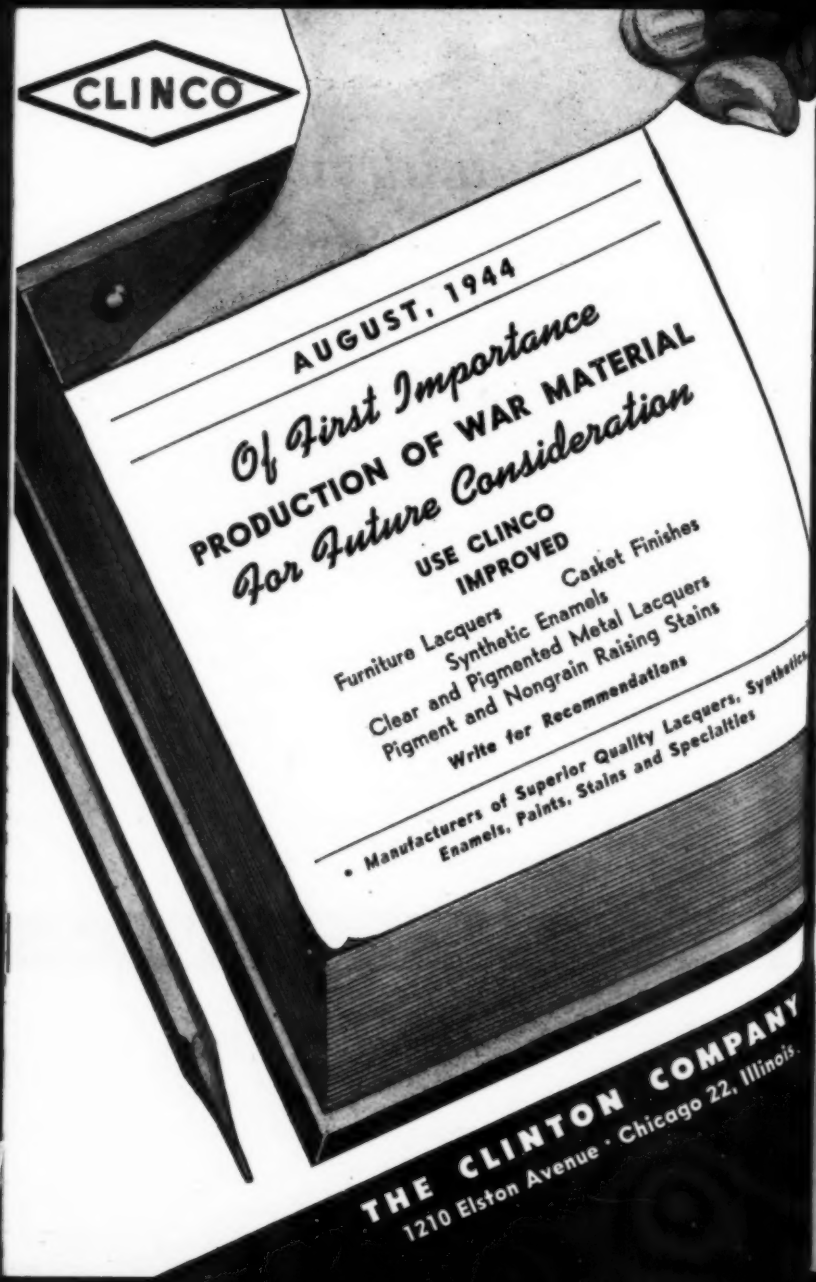
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parallel those of the priming coat. Adhesion and moisture resistance are of utmost importance. When the products will be exposed to moderate conditions during service life, one or two coats of finish will usually suffice. But when severely corrosive conditions are anticipated, three or more coats are generally applied.

The phenolic resin varnishes with a moderate oil content have proved satisfactory. The durability of this type of coating can be materially improved by forced drying or baking. The pigment should be selected with care and with an eye to moisture resistance. Aluminum powder, when and if available, serves satisfactorily in this capacity.

The method of applying finish coatings to magnesium is also important. Prime coatings may be applied by dipping or spraying, but it is recommended that finish coats be sprayed to assure an even homogeneous surface.

When finishing sand castings, it has been found expedient to preheat them to baking temperature prior to application of the prime coat. This preheating expels moisture and any corrosive gases that happen to be in the pores of the metal.

When applicable, there is little doubt that baked finishes will provide the best overall protection for magnesium alloys. This is especially true of small parts and the cast materials. Urea formaldehyde type coatings are effective where the part involved is sufficiently rigid to prevent subsequent flexing and possible cracking of this type of coating.

### Other Types of Treatment, Too

There are more types of treatments for the magnesium alloys than have been covered in this article. Such treatments are usually for a specific limited purpose, or are as yet in the experimental stage. The treatments given in this article have all withstood the test of time and use, and are approved by the various producers of magnesium alloys.

Though previously mentioned, it is reiterated at this time that choice of surface treatment must be controlled by the alloy involved and the anticipated service conditions. Improper selection of treatment will result in inferior protection, and possibly early failure. To identify the various surface treatments discussed in this article with the designation given such treatments by the two principal producers of magnesium alloys, the following table is given:

| Common Name of Surface Treatment | American Magnesium Corp. Designation | Dow Chemical Company Designation |
|---|---|---|
| Chrome-pickle | AMC A | Dow No. 1 |
| Sealed chrome-pickle | AMC L | Dow No. 10 |
| Acid dichromate | AMC G | Dow No. 7 |
| Alkaline dichromate | AMC H | Dow No. 8 |
| Galvanic anodic | AMC K | Dow No. 9 |

In final conclusion the author wishes to voice a warning. Don't be mislead by the pessimistic cry occasionally raised that magnesium has no future. American industry is not in the habit of pouring hundreds of millions of dollars into new developments unless it is "in the know." Take it for granted that the backers of the huge new magnesium plants are no exception.

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# Painting Practice Bombs

**BY G. H. ROBERTSON**
**Industrial Finishes Division**
**The Sherwin-Williams Co.**

Bombs passing automatic spray station (where spray guns at the moment are turned off to allow the picture to be taken). Photo-electric cells at lower right actuate spray nozzles which are so positioned that, when turned on, they give each bomb a complete and uniformly even coat of synthetic lacquer.

DISPATCHES from the European front tell a familiar story of the amazing accuracy of United States bombardiers. Part of the credit goes to the development of such devices as the famed Norden bombsight. Yet even the most "human" machine devised requires skill on the operator's part. The greater that skill the more remarkable will be the machine's performance.

Long before a bombardier aims a high-explosive bomb at a real target, he has dropped hundreds of practice bombs from a height of several thousand feet into a marked circle a few feet in diameter. Later, when he flies through a hail of flak to reach his target, he has the satisfaction of knowing that the lessons learned while dropping "dummy" bombs apply equally as well when he is aiming real bombs.

### Practice Bombs Are Important for Training

Production of practice bombs, therefore, implies a serious responsibility. Practice bombs must be fabricated in such a manner as to reproduce the action of a high-explosive bomb in every detail. Then, too, for every high-explosive dropped over an enemy target, there must be anywhere from 25 to 100 practice bombs consumed during the bombardier's training. This requires that production fa-

Painted bombs are marked for quick identification by rolling them over a rubber plate that has raised letters on which white paint is put on by a hand roller, see lower right hand corner. Photo: The Sherwin-Williams Co.

cilities combine high-speed with accuracy. Briefly, these were the two major problems facing the Rheem Mfg. Co. of Chicago, Ill., when Army Ordnance assigned it a contract for hundreds of thousands of practice bombs.

A considerable number of years spent in metal drum fabrication gave the company a large backlog of experience upon which to draw. Ordnance specifications called for a welded bomb case, sturdy enough to support the 100-lb. weight of the finished bomb and a complicated tail-fin assembly where tolerance was extremely close. Daily output requirements were high, finish specifications were rigid, and every completed bomb was subjected to close inspection. How the company was able to do this manufacturing job makes an interesting case history of the application of modern high-speed fabricating and finishing equipment and materials that should contribute immensely to postwar industrial efficiency.

### A Sheet Steel Job and Its Essential Parts

The entire bomb is made of 22-gauge SAE No. WD-1010 sheet steel, with the exception of the nose section which is 18-gauge steel and the carrying lugs which are 5/16-in. steel rods. The unit is broken down into four assemblies; nose, body, cone or sleeve and tail fins. An opening in the bomb neck, immediately following the tail fins, holds a small explosive charge which, along with the weight charge (usually sand) is inserted at the training center.

In operation, the practice bomb weighs 100-lbs. and is equipped

# Couldn't

## BE DONE

## . . . YET HERE IT IS

WRINKLE FINISH WOOD? Couldn't be done [illegible] would blister on baking—

*Yet* WRINKLE is now used on wooden radio cabinets, typewriter cases and similar articles previously made of metal.

WRINKLE FINISH PRESSED PULP, CELLOTEX or MASONITE? Couldn't be done because they [illegible]—

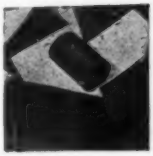
*Yet* WRINKLE is now used on clock cases, [illegible] panelling, etc.

WRINKLE FINISH PAPER or FABRIC? Couldn't be done because they would be too absorbent and [illegible]—

*Yet* WRINKLE is now extensively used for wrapping paper and decorative papers and fabrics for [illegible] applications.

WRINKLE FINISH RUBBER? Couldn't be done because it would not stand bending or would [illegible]—

*Yet* WRINKLE is now being used on bicycle [illegible] and many other products.



Bell-Wrinkle Signature

WRINKLE

# FOR YOUR POSTWAR PRODUCTS...

# THE MOST *Versatile* FINISH OF ALL

**METAL.** Nitrocellulose lacquer offers *big* advantages to manufacturers using metal: *Unlimited* color range—high gloss or dull matt finish—*fastest-drying* finish known—easy and cheap to apply and repair.

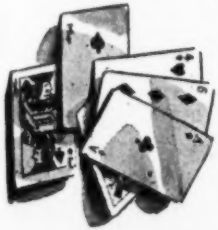
**LEATHER.** Lacquered leather lasts longer—looks lovelier, because it is protected from perspiration.

apply and repair.

**LEATHER.** Lacquered leather lasts longer—looks lovelier, because it is protected from perspiration, scratches. May be easily cleaned.

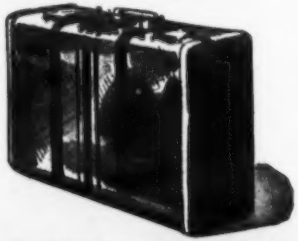
**RUBBER.** Nitrocellulose lacquer is an extremely flexible finish—making it ideal for galoshes, many other rubber articles. Imparts gloss and preserves the rubber.

**WOOD.** Good for both expensive *and* economy types of furniture, nitrocellulose lacquer protects, lasts, looks well, resists dust and fingerprints. Ideal for assembly line production.



**PAPER.** Paper may be *rollercoated* with crystal-clear or colored nitrocellulose lacquer. Brightens and intensifies colors, resists scuffing, damage from handling, fats, acids and fingerprints. Waterproofs, is washable.

**FABRICS.** There's a growing market for light, airplane-type luggage—and nitrocellulose lacquers are the ideal finish—non-scaling, never sticky, good-looking.



*HERCULES*

**NITROCELLULOSE**

Hercules makes no finished lacquers, but supplies the nitrocellulose from which lacquers are made. For helpful application information on your finishing problem, call your lacquer supplier. Cellu-

with a detonating fuse and arming wire. The nose is cold drawn in three operations, using a soluble-oil lubricant. The lip of the nose is fitted for insertion into the bomb body. Sheets for the body are pre-formed on a roll press and holes for lugs are punched. The formed sheet is spot welded in four places to facilitate the seam weld which follows. The neck is formed by stamping the piece, pre-forming, spot welding and seam welding. The fin assembly presented a complicated problem of aligning numerous pieces during spot welding. A 3-armed jig was designed to hold the pieces while they were being spot welded in place. More than any other feature of the entire fabricating process, this tail-fin jig contributed to greater output.

### Conveyorized Cleaning Plus Automatic Spraying and Drying

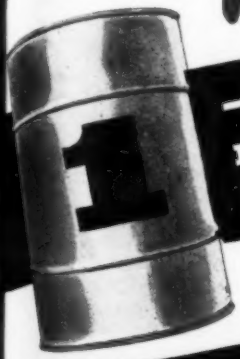
When the bomb nose, body, neck and tail fin are assembled, the unit is mounted on an overhead monorail conveyor and is not removed or handled until ready for identification and packaging. Finish specification calls for a synthetic lacquer which dries to the touch within 45 seconds under forced drying. At the Rheem plant, practice bombs are painted entirely by automatic spray equipment.

After the bomb passes through a conveyorized washing machine, where all surface grease, oil and dirt are removed with an alkaline wash, it moves by overhead conveyor past the front of a water-wash paint spray booth. Each bomb, as it passes breaks a photo-electric cell circuit and actuates a battery of spray nozzles, which are so arranged that every exposed surface is coated with the specification finish. The operation requires only occasional inspection of the nozzles to prevent clogging. Ordnance specifications call for one coat of finish. The bomb then moves into an infra-red drying oven and its finish is baked hard and dry.

Painted bombs entering drying tunnel. Photograph: The Sherwin-Williams Co.

Accurate control of the quality of the protective coating depends on many factors. Proper thinning, for example, is essential if the finish is to dry hard and evenly during its limited stay in the infra-red oven. Too thin a consistency may result in the material "running" and the formation of an uneven coating. If it is too "heavy," it is likely to clog the spray nozzles. From a performance viewpoint, the finish must show a high resistance to abrasion. The presence of only one coating might, if the finish surface were soft and

# A drum from Reliance is *Twice* filled!




**—with the finishing material You Know is right for the job**

**—with Reliance's 25 years of practical and technical "know-how"!**

***You are invited NOW to submit to us your post-war finishing problems. Our research and engineering departments are at your command without obligation. Write us.***

*Rely on Reliance*

EXPERIENCE IMAGINATION RESOURCEFULNESS

**Reliance Varnish Company**

INCORPORATED

Louisville, Kentucky — Chicago, Illinois

adhesion poor, permit corrosion of the unprotected steel surface. The Rheem organization conducted numerous experiments before their present efficient finishing system was devised.

Soon after the bombs leave the drying tunnel, they are removed from the monorail conveyor for marking and packaging. A white identification paint, especially developed for the purpose, is applied with a rubber printing pad. Each bomb is equipped with an arming wire and it is packaged in a corrugated container for shipment to Air Force training centers.

---

### *Mitchell-Bradford Appoints Mid-Western Director*

Mitchell - Bradford Chemical Co., Bridgeport, Conn., manufacturer of metal finishes has appointed Wm. H. Price, Jr., as Mid-Western regional director. The territory will include 11 states. Mr. Price's headquarters will be in Chicago, temporarily at 432 Roslyn Pl., Chicago 14, Ill. A substantial emergency stock of materials will be carried in a Chicago warehouse.

---

### *Kearney and Faler Advanced in Detrex Engineering Staff*

Detrex Corp., Detroit 27, Mich., manufacturer of metal-cleaning equipment, chemical cleaning compounds, oil-extraction plants and dry cleaning machinery, announces two appointments in its Engineering Department.

Thomas J. Kearney, formerly technical advisor to the Director of Sales, has been promoted to Assistant Chief Engineer in charge of Industrial Equipment Design and Detailing. Mr. Kearney has been associated with the company for ten years and has wide experience in sales, service, production and engineering capacities.

John A. Faler, Assistant Chief Engineer of the company has been appointed to take charge of Extraction Equipment Development. Detrex Corp. has developed complete equipment for the extraction of oil from soybeans by the use of a non-flammable solvent. Mr. Faler will coordinate new design and equipment development work in this division.

## Conveyorized Cleaning-Painting Set-up

A SIMPLIFIED conveyor set-up wherein vapor degreasing (metal cleaning) and prime coating (dip painting in this case) are made to function automatically and continuously, has been placed in operation at the plant of Engineering Metal Products Corp., Indianapolis, Ind. A view of the installation is shown in the accompanying picture.

The products being processed are industrial "baskets," each of which consists of a welded angle-iron frame paneled with expanded metal. Drop handles are fastened to each end.

These baskets arrive at the cleaning-painting station by gravity roller conveyor. Their surfaces still retain some mill oils, shop dirt and finger marks — all of which are harmful to paint adhesion. Accordingly, the baskets are cleaned by passage through a vapor degreaser — by horizontal conveyor travel through the vapor of a highly stabilized chlorinated solvent.

Specially designed hooks, attached to the conveyor chain, automatically pick up one end of each metal basket, as its turn comes, and carry it through the vapor degreaser. Length of passage through cleaning vapor is about 10-ft., at the rate of 4-ft. per minute. During passage through the vapor degreaser, the metal baskets reach the temperature of the cleaning vapor, which is slightly over 188° F. The basket surfaces are perfectly cleaned, and as each basket emerges from the vapor its surfaces dry immediately.

After a short length of travel

## Be on the LOOKOUT

Smart manufacturers, while still busily engaged in war work, are nevertheless looking to the future and planning accordingly. Those who have made definite plans will benefit most. Be on the LOOKOUT for whatever the future holds for industry!

# "Call on Walker"

Let Walker help you in selecting your finishes for civilian application. It isn't likely that just any pre-war finish will satisfy postwar requirements. Too much has been learned during these strenuous war years; much research has uncovered and revealed better types of materials from which to formulate finishes of lasting beauty and protection.

Walker laboratories have been busy in developing civilian finishes for after the war application, and doubtless, can recommend just the coatings to fit your needs. Just "Call on Walker" for

**PRIMERS** **SURFACERS**

**SYNTHETICS**

**WRINKLES** **LACQUERS**

•

H. V. WALKER CO.

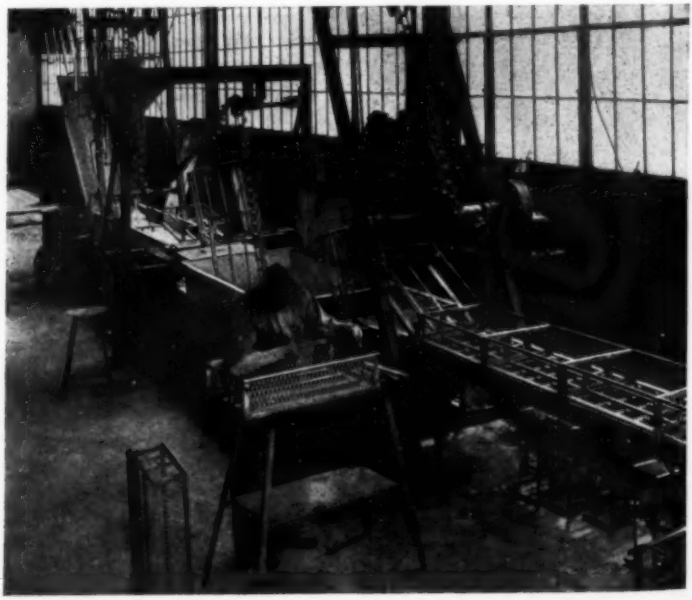
Elizabeth, New Jersey

MODERN PRODUCTION FINISHES

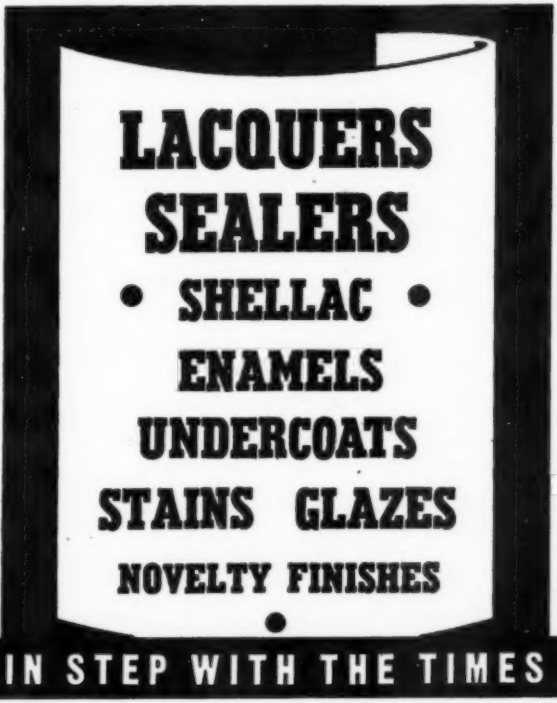
for air cooling, the baskets pass through a dip tank filled with red oxide primer. The entrance and exit ends of the paint dipping tank have a very gradual down slope towards the middle, but the sides at right and left of the line of travel are vertical. The primer is an air-drying material. It dries as the conveyor carries the painted baskets upward over the sloping drainboard and forward to the building exit. To accelerate the drying of this dipped paint coating, a ventilating fan is installed to blow warm air over baskets as they move forward.

When the baskets reach the outside of the building they are released by the overhead chain conveyor and let down on a gravity roller conveyor which guides them to a loading platform where they are loaded into box cars for shipment.

Here is another example that shows how conveyorization can be employed effectively in industrial establishments to maintain a steady rate of uniform quality production, automatically. An attendant is only needed to see that everything is going satisfactorily, to start and stop the conveyor whenever this is necessary, and to make occasional tests or adjustments of the material in the tanks, etc. A helper can feed the conveyor. At specified times, say once a week or once in ten days, the vapor degreaser must be cleaned. Also the paint tank and drain-



Conveyorized set-up includes vapor degreasing, a prime-coat dip and drying.




IN STEP WITH THE TIMES

*Industrial Finishes*

*that make the most of available raw materials to give you greatest durability, together with attractive appearance and economy.*

• FOR APPLICATION BY ALL METHODS

JAMES B. DAY & CO., CHICAGO

board must be cleaned at reasonable intervals. This maintenance work can be so timed that it does not interfere with continuous production during the regular working shifts.

## Care of Silk Screen Stencils

SILK screen stencils are being widely used for decorative purposes, stenciling and graining reproduction. Protection of the original investment in screen stencils has always been a sore spot with us. While the screen stencil seldom costs more than $75, even the small one-foot-square screen stencil impresses one as being expensive when compared with a $10 bill. Thus we find it desirable to take adequate precautions to make sure that our screen stencils are cleaned properly and protected while not in use.

Silk screen stencils should not be washed on the underside except when absolutely necessary. They should never be washed with thinners, if naphtha will do the job. The gelatin is on the underside of the screen and repeated washings will soften this, with the result that you will soon be getting blurred effects. We spread two thicknesses of paper on a smoothly surfaced table and wash the screen with plenty of naphtha until we know positively that it is clean. If any dirt still remains in the mesh, which we can see when the screen is held up to the light, then we use a little thinner for cleaning; but we use it carefully.

After the washing, which is done with a generous quantity of clean naphtha, we wipe the screen stencil dry on both sides with a soft clean cloth. Then we hold it up to a light again to make doubly sure that it is clean. After the final inspection, we nail a flat board or panel to the face side of the screen and another to the underside of the screen. The second panel has a cleat all around it, about 1-in. thick and 1-in. wide, to provide air space for underside of the screen.

This panel or case protects the silk screen from being punched through when not in use. This precaution, together with careful cleaning with mild solvents, prolongs the life of our silk screen stencils. In fact, we have one screen of very fine character which has been used to make 15,000 impressions, and it shows only slight traces of wear. Continued adequate care will protect this $75 investment, which could easily have been ruined the first day.—K. S.

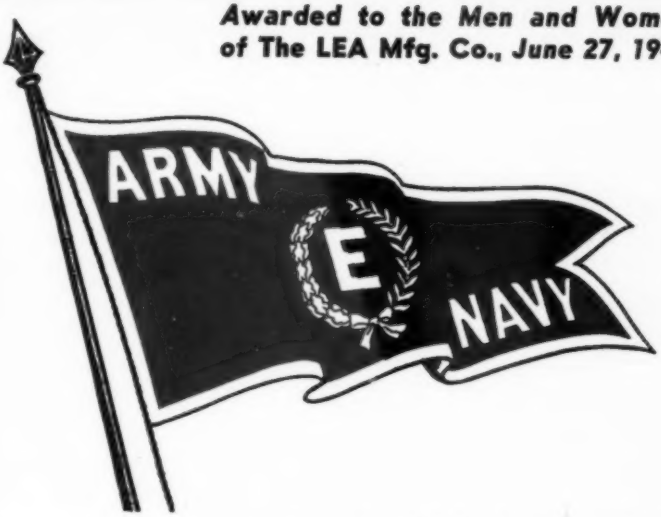
## *New Southeastern Manager for Sherwin-Williams*

The Sherwin-Williams Co., Cleveland, Ohio, announces the appointment of W. B. Bell as manager of its southeastern sales district, with headquarters at Atlanta, Georgia.

Since joining the company in 1922, Mr. Bell has occupied numerous sales positions, becoming Cincinnati Division sales manager in 1933. In 1935 the Atlanta-Nashville divisions were combined under the managership of Mr. Bell. Later he became Industrial sales manager for the then South Central Division. Mr. Bell's experience has been widely dispersed in the trade sales, industrial, automotive and graphic arts fields.

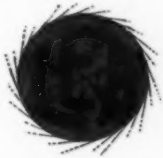
**W. B. Bell, with Sherwin-Williams 22 years, becomes Southeastern Mgr. with headquarters at Atlanta, Ga.**

***Awarded to the Men and Women of The LEA Mfg. Co., June 27, 1944***




## *Honor to Faithful Workers*
## *Recognition of An Industry*

The Army and Navy "E" Award is a tribute to workers . . . a tribute to those who plan, design and produce . . . and rightly so! We here at LEA are deeply honored by the recognition accorded us by the two great Services. But in a sense, this award more than encompasses just our plant and our employees. It is recognition of the vital part LEA finishing operations and LEA compositions play in the gigantic task of producing implements of war.



Yes, we at LEA are mighty proud of the "E" Pennant that will now grace our plant. But we are deeply conscious of the fact that it imposes a great responsibility. More keenly than ever do we all realize that the fruits of our efforts here are needed for the vast war production being carried on by American industry.

# THE LEA MANUFACTURING CO.

**WATERBURY 86, CONN.**

***Burring, Buffing and Polishing . . . Manufacturers and Specialists in the Development of Production Methods and Compositions***

8-LM-7

## Self-Draining Compressed-Air Separator

A self-draining compressed-air separator, which eliminates the need for external traps or the uncertainties of manual draining has been developed by the Johnson Corp., Three Rivers, Mich. Known as the Johnson Type SA Separator, it has a complete trap mechanism built right in, which releases from the separator, automatically, all the water, oil and other moisture that has been removed from the compressed air.

The trap mechanism is simple and compact, with spherical float and chrome steel valve and valve seat. It is mounted on the bottom plate of the separator body, and can be quickly and easily removed for inspection or cleaning. All the moisture that has been removed from the compressed air drops to the bottom of the separator, and when the level of the accumulated liquid is sufficient to raise the float, the valve opens and the liquid flows out the drain.

## Flexible-Pad Rotary Sanding Tool

The Mushroom Pad, with preformed abrasive cloth disc, as illustrated in the accompanying pictures, is adapted to smoothing, cleaning and polishing formed surfaces. It is a product of Behr-Manning, Troy, N. Y.

It was originally designed for shaping and smoothing the drawing dies used to form the various sheet metal parts for fabricating wings, fuselage, tail assemblies and various other parts which go into a metal airplane.

**Shaped flexible disc and abrasive paper attached to flexible-shaft driven head.**

The face is convex and the discs are moulded to fit, being held in place with a plastic cement, which avoids any loss of time in making the application. The shape is suitable for burring and polishing edges, finishing flat or convex surfaces, but its greatest value is in shaping, grinding and polishing of low areas.

It is made with a ¼-in. straight shank adaptable to any portable flexible-shaft electric or air tool equipped with a ¼-in. chuck or collet, turning up a speed of not to exceed 5500-rpm. It is 3-in. in diameter and weighs only a few ounces. The abrasive discs are punched with a small center hole which fits over a short nipple in the center of the pad, thus automatically centering the disc.

# *Materials Supplies Equipment*

## Phosphorescent Paints

A new phosphorescent pigment, which emits a brighter phosphorescent afterglow for a longer period of time than similar long-afterglow pigments is announced by The New Jersey Zinc Sales Co. This pigment (designated CaS-SrS-2470) is specifically intended for use in such wartime applications as phosphorescent paints, marking tapes and decalcomanias, but unquestionably will find peacetime uses.

The New Jersey Zinc Co. has been instrumental in the development, and large scale production, of luminescent

Since 1875

# O'BRIEN

## INDUSTRIAL FINISHES

*Not the Most · · Just the Best*

## ONE NAME...MANY PRODUCTS

THE CORPORATE name of the O'Brien Varnish Company may seem somewhat incomplete in view of the wide diversity of product types O'Brien's manufacture today. But because a name of good repute is a definite asset and brevity itself is still desirable, the O'Brien Varnish Company has deemed it inadvisable to change its official name.

Through the years O'Brien's have broadened their activities to manufacture many hundred different items in protective and decorative finishes. Their architectural finish line today includes stains for clear wood finishes, clear wood sealers, clear varnishes with both glossy and satin lustre, clear and pigmented sealers for plaster and composition walls, primers and undercoats for enamels, gloss and eggshell enamels, flat wall finishes and exterior house paints. So much for architectural finishes.

For American industry, O'Brien's manufacture a very complete line of metal primers, surfacers, air drying and baking enamels for such commercial items as automobile accessories. O'Brien's furniture finishes cover a wide range of wood sealers, undercoaters and enamels, while O'Brien's line of toy enamels has proved equally popular. All types of black finishes are offered and core blacks are among the specialty products.

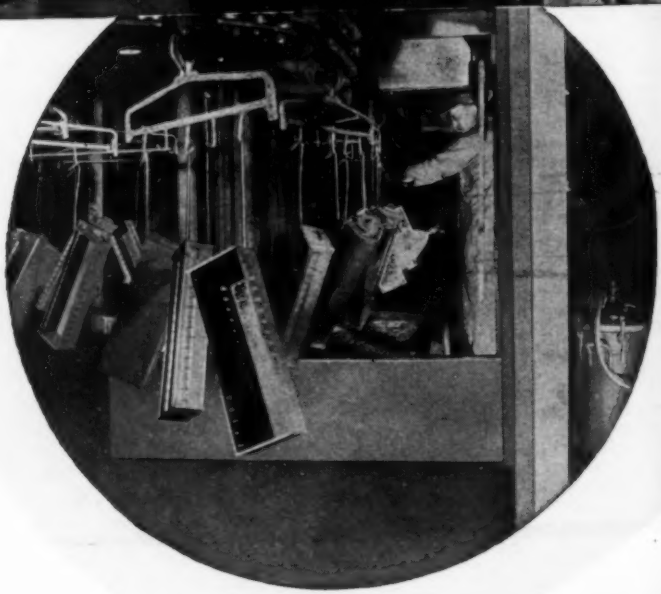
A splendid example of O'Brien's widely accepted industrial finishes is No. 4885 Black, used as a universal black satin finish by many industrial concerns, since its applied cost per square foot is even less than that of conventional asphalt blacks. Reducible with an equal volume of naphtha, O'Brien's No. 4885 Black is very stable in the dip or storage tank, dries quickly to a solid covering satin lustre with distinct rust-inhibiting properties. Try it. You'll like it.

The very breadth of the field covered by O'Brien's instantly suggests consulting them for an early solution to any newly submitted problem of finishing.

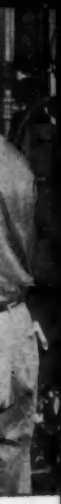
Contact O'Brien's whenever a problem arises in your finishing operation. Let O'Brien's chemists and physicists lend a hand.

**O'BRIEN VARNISH CO.**
**South Bend 21, Ind.**

# Whether you're producing for NA



# for WAR FRONTS or HOME FRONTS



## *Here are two ways to step up the speed and quality of your finishing operations*

TO defeat the Axis this year, we must not only produce more weapons for battlefronts but also more of the goods needed for full war effort on the home fronts. And in many plants, their production speed can be stepped up with modern DeVilbiss Spray Finishing Methods.

The two views at the left show what we mean. At Minneapolis-Moline Power Implement Company (left above) the difficult job of coating 155 mm. shell is done right on the conveyor line. In a specially designed DeVilbiss spray booth built over the conveyor, both the interior and exterior of the shells are coated simultaneously at regular production speed.

At the Lyons Metal Products Company, (left below) a steady stream of box inserts for stock parts move over the conveyor line through a DeVilbiss Water Wash Spray Booth—where DeVilbiss Spray-Painting Equipment finishes them as fast as they come.

Maybe an outdated finishing system is limiting the speed, quality and economy of your finishing operations. If so, replace it now to hurry the war's end and put you in a preferred position in the reconversion days ahead.

**THE DEVILBISS COMPANY • TOLEDO 1, OHIO**
Canadian Plant: WINDSOR, ONTARIO

**DE VILBISS**
*Spray Systems*

SPRAY EQUIPMENT • EXHAUST SYSTEMS
AIR COMPRESSORS • HOSE AND CONNECTIONS

pigments which have been used on a tonnage basis in a number of war applications. There are two major groups of luminescent pigments:

1) Fluorescent, or those pigments that emit light only during the time they are exposed to the irradiation of an ultraviolet light;

2) Phosphorescent, or those pigments that continue to glow for some period after exposure to any light.

Fluorescent pigments are used extensively to make luminescent instrument dials, navigational charts and computers, and similar items. Phosphorescent pigments are used chiefly for marking tapes aboard ships and in the field.

Postwar uses may include many useful industrial applications, such as diffusers for lighting fixtures, furniture edging and trim, escutcheon plates and medallions, door knobs, switch plates, drawer fronts, kick plates, printed and etched signs, displays, billboards, posters, telephone hand sets, lamp bases and shades, decorative textiles and murals, and other practical uses.

## Stop-Off Lacquer

A new stop-off lacquer, specifically developed for masking of parts for hard chrome plating, is announced by Michigan Chrome and Chemical Co., 6340 Jefferson Ave., Detroit, Mich. This material combines many of the most desirable characteristics of Miccrome Supreme Stop-Off Lacquers HB-401 and HR-302, both widely used for masking purposes, with several additional advantages chief of which is a much greater ease of removel.

The new lacquer, known as Miccrome, can be applied easily by brushing, dipping, or spraying and provides a smoother and more even coating than the other two lacquers. It offers fast air-drying qualities and requires no force drying. During plating, it adheres perfectly even to surfaces which have been chrome-plated.

After plating, Miccrome can be easily peeled or dissolved. It can be removed from hard-to-reach spots by hot soaking for a short interval and then blowing the remaining material off by the use of compressed air. Because of this feature, clean-up time is reduced to a minimum.

This material has excellent dielectric strength which provides accurate control of deposit and a minimum of current lost. As the material trims cleanly, it is always possible to secure a sharp line of demarcation of the work. Its clear red color gives definite contrast against the exposed surface.

## Moisture and Fungus-Resistant Coatings for Equipment

The Industrial Research Division of Wipe-On Corp., 105 Hudson St., New York 13, N.Y., has developed four moisture and fungus-resistant coatings. Two are of the varnish type, and two are of the lacquer type. Because some Government agencies and prime contractors specify one type of fungicide, and others another type, the Wipe-On Corp. provides a varnish containing each specific type of fungicide, and also a lacquer containing each type of fungicide.

These four products are:

1) Tuf-On No. 74-F Bakelite-Resin Varnish; contains 10% pentachlorophenol, and has a 43% non-volatile; 12 minutes to set; one hour to dry.

2) Tuf-On No. 74-FM Bakelite-Resin Varnish; contains 1% phenyl mercuric salicylate, and has a 35% non-volatile; 5 minutes to set; 45 minutes to dry hard.

3) Tuf-On No. 58-F Coating; contains 10% pentachlorophenol, and has a 20% non-volatile; 5 minutes to set; 10 minutes to dry hard.

4) Tuf-On No. 58-M Coating; contains 1% phenyl mercuric salicylate and has a 20% non-volatile; 5 minutes to set; 10 minutes to dry hard.

Tests and use indicate that these products will meet any requirement of the Government agencies or production schedules.

The Wipe-On Corp. recommends the varnish types (74-F and 74-FM) for the protection of rigid parts and assemblies, because of their extreme-

OUR SEALER JUST WON'T WORK RIGHT, MR. JONES. WE'VE GOT TO DO SOMETHING ABOUT IT—QUICK! GOT ANY SUGGESTIONS?
YES, I HAVE, BILL. LET'S CALL S-I-P AT EVANSVILLE. YOU'VE SEEN THEIR ADS IN "INDUSTRIAL FINISHING" AND I UNDERSTAND THEIR LAB GIVES REAL "PRACTICAL COOPERATION" THAT WE CAN DEPEND ON!

***Yes, you can call S-I-P and get***

# PRACTICAL HELP

***when you need it!***

Turn your finishing troubles over to S-I-P specialists. Get personal, individual, practical assistance from men hand-picked for their technical knowledge, shop experience and analytical ability . . . men who know present-day conditions and how to meet them.

Phone S-I-P today! There's no charge for consultation—it's our way of making new friends for S-I-P WEAR MASTER Furniture Finishes.

**and here's**
**IMPORTANT NEWS**
**for makers of**
**CIVILIAN FURNITURE**

You CAN get good finishes, now. Dependable, easy-working, economical NEW non-priority finishes so definitely worth while that they will undoubtedly continue to be used even when other more critical materials are again available.

Send for details on S-I-P Non-Priority Stains, Sealers and Topcoats.

**PHONE EVANSVILLE 4-4255**

## Standard Industrial Products, Inc.

EVANSVILLE 4, INDIANA

Wear Master FINISH

ly high moisture resistance, dielectric strength and good adhesion. The No. 58 lacquer-type coatings are recommended when considerable flexibility in the coating is required, such as for wire, and where a fire-retardant quality in the coating is desirable. These No. 58 coatings are also recommended when the production schedule necessitates faster drying than can be obtained with the more moisture-resistant varnishes (No. 74-F and No. 74-FM) and where better protection has to be sacrificed for speed of production.

The Varnish-type coatings have an advantage in relation to "use cost," in that they have a higher solids or non-volatile content, which makes possible the application of only about one-half as much varnish as would be required with lacquer, to provide the same film thickness. With the same film thickness, the varnish-type coating provides better moisture resistance, and from all indications, a longer protective effectiveness against mold and mildew growth.

These coatings have all been approved by the Signal Corps for their tropicalization process under their Specification 71-2202-A, April 12-44.

## Drawer-Type Ovens for Postwar Needs

Designed specifically for preheating bakelite prior to forming it into distributor caps, ovens like the one illustrated here may be used for finish baking small items or can be converted to other uses at moderate cost.

With the exception of the front panels containing the drawers, ovens were assembled from standard units. Since the drawer panels are the same overall size as regulation doors, if the nature of the work should change in the future, the ovens can be converted into the usual shelf-type by merely substituting standard doors for front panels, and putting in the shelves, supports for which are already in place.

In these ovens, heated air is circulated on the down-draft principle, applicable when the work consists of quantities of small parts. As a further aid to free circulation and elimination of heat losses, drawers are constructed of expanded metal, and close against asbestos gaskets. Temperatures up to 500°F. are under fully automatic control, and the ovens may be connected to exhaust piping if necessary.

When you prefer it a door can be substituted for the panel of drawers.

Ovens like this are designed and manufactured by Koch Industrial Equipment, Evansville, Ind.

## Jet Agitators for Heating Acid Tanks

The Heil Engineering Co., 12901 Elmwood Ave., Cleveland, Ohio, has developed a new type of steam jet for tank processing of bar metals, wire, and continuous sheet or strip, furnished in flanged sections which can be coupled together to provide any desired length, and to extend the agitating and heating effect to any part of a tank.

Designed to speed pickling or processing and to provide more complete agitation and more uniform heating,

BAKING ENAMELS
LACQUERS
ENAMELS
SEALERS
PRIMERS

NEW PERIOD
WOOD and METAL
FINISHES

SYNTHETICS
VARNISHES
SHELLAC
FILLERS
STAINS
SUPPLIES

# HEADQUARTERS

## FOR COMPLETE LINE OF PRODUCTION FINISHES AND LABORATORY SERVICE

**Inquiries Invited!**

NEW PERIOD PRODUCTION FINISHES

NEW YORK WOOD FINISHES SUPPLY CO. INC.
109 IMLAY STREET BROOKLYN, N. Y.
Established 1919

this jet can be adapted to square, rectangular or round tanks. Boiling temperatures can be attained, at which these rugged jets will give unusually long service. Sections are usually made in lengths of about 10-ft., and are coupled with lead bolts, with a blinde flange to close the open end. Nozzles are spaced along the tank bottom on 15-in. centers unless otherwise specified by the user.

The series of nozzles along the entire length of the tank creates a rolling, agitating effect similar to a barrel roll, causing the liquid to circulate above and around the parts immersed. The effect is increased by placing jets on either side or all around the bottom of the tank, with nozzles set at angles to produce the maximum rolling effect. The nozzle used is a patented device with an orifice of graphite carbon, which is unaffected by the corrosive attack of most chemical solutions.

Several modifications of this same style yet are available. These have been developed for batch processing.

Jets are furnished with a steam flange and bolts to connect to a standard 6-in. O.D. flange reduced for 1-in. steam supply line. The recommended steam pressure is 80-lbs., although a maximum pressure of 125-lbs. may be used. It is possible to use air steadily or intermittently along with steam to produce greater agitation, and in some cases this has been found desirable.

## Balancing Compound for Motor Armatures

The Sterling Varnish Co., 141 Ohio River Blvd., Haysville (Suburban Pittsburgh), Penna., announces R-943 Balancing Compound—a material designed for the balancing of electric motor armatures.

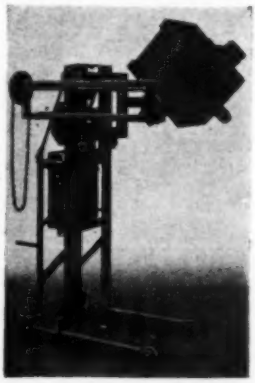
It is supplied in paste or soft putty form, so application can be made easily with the hands or with a knife. It will set in air at room temperature in about two hours to a condition such that it will not be affected by subsequent application of insulating varnishes. It does not, however, attain its maximum hardness and mechanical strength unless it is subjected to a temperature of 275° F.

Although Sterling R-943 Balancing Compound was originally intended for the balancing of rotating parts, it is proving to be a highly interesting material for certain types of filling operations, such as coil margins and small interstices where good adhesive qualities, a low coefficient of expansion, and high mechanical strength are required. It is normally supplied with buff color but may be furnished in black if desired.

## Acid Carboy Dispenser

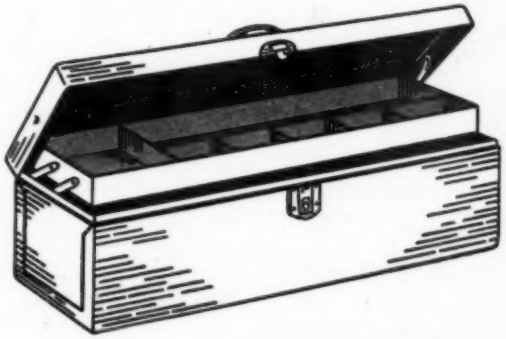
Pouring acids from a carboy by hand is a hazardous and sometimes difficult procedure. Furthermore, it is often impossible to raise the container high enough to empty its contents into a vat or tank.

The Revolvator special carboy dispenser makes the job easy and entirely safe. The Revolvator is wheeled into position so it straddles the carboy on the ground. Turning a roller in front of carboy tightens clamps through heavy screws until the carboy is securely held. Turning a crank quickly elevates the carboy to



Lifts and tilts carboy of acid easily.

# Increase the Utility of Fishing Tackle Trays



*with*

## *Cellusuede* FLOCK

Maximum protection against the scratching or damaging of choice flies and other equipment, would be greatly appreciated by any fisherman. Coating tackle box trays with Cellusuede Flock insures just such protection and the rich velvety effect will also give your boxes a very handsome appearance. Cotton or Rayon Flock increases the eye-appeal and utility of nearly any product . . . is easy to apply . . . costs very little. Available for immediate shipment in a wide assortment of colors.

CP *Cellusuede Products, Inc.*
ROCKFORD, ILLINOIS

the desired height. It is then tilted slowly by rotating a chain which drives through a worm mechanism. The carboy is held in any desired position until moved again by the chain. After emptying, the carboy is returned to an upright position and gently lowered by the standard Revolvator dead man brake lever which is the same handle as is used for elevating.

The Revolvator carboy dispenser is a single example of special adaptations of portable elevators made by the Revolvator Co., North Bergen, N.J. A similar machine is used for barrel or drum dumping.

## Nozzles to Spray Acids

For chemical processes involving the spraying of acids or other corrosive liquids, there are now available atomizing nozzles made entirely of hard rubber.

These nozzles produce a hollow-cone type of spray, effecting uniform distribution of the liquid being sprayed. A variety of sizes provides a practical range of capacities and spray angles which permit exercising of close control over spraying operations.

For each of these capacities, liquid atomization is the finest possible at available pressures, and is the most complete that can be secured, using relatively low-hydraulic pressure alone.

Nozzles are of core type, accurately machined and carefully finished. Overall dimensions are a 1-in. diameter; length, 1½-in. The manufacturer is Spraying Systems Co., 4017 W. Lake St., Chicago 24, Ill.

## Coating Protects Wooden Degreasing Trays

Wooden trays coated with compar, a vinyl resin derivative developed by Resistoflex Corp., Belleville, N. J., are now being used by one of our large government arsenals to solve a health hazard which existed in the operation of degreasing lenses and prisms. After the etching process on lenses or the polishing and grinding of prisms, the optical elements must be degreased. Fitted into sockets in the trays to prevent scratching, they are dipped in a tank of tichlorethylene, a solvent which is a toxic hazard at close contact.

When it became necessary to use wooden trays because of the shortage of metals it was found that workers were exposed to the dermatitis-causing degreasing solvent through the handling of trays that had been dipped in tichlorethylene. Although the trays were perforated to permit the solvent to drain back into the tank, they absorbed as much as 5-cc. of the solvent, rendering them unsafe to be handled. Now, by a simple process of coating the perforated trays with compar, they are made non-absorptive, thereby safeguarding the health of all who must handle them.

## Protective Coating for Plastic Surfaces

Protecto-Kote M-13870, a liquid coating used to guard plastic surfaces in airplanes during fabrication, is now being produced in quantity by The Reserve Research Co., 1637 Superior Ave., Cleveland 14, Ohio. Protecto-Kote has been approved by the Army Air Forces.

Protecto-Kote dries rapidly, forming a protective coating against scratching, abrasion, etc. It is impervious to grease, paints and paint solvents. It is used on such aircraft plastic surfaces as window lights, instrument panel plastic installations, etc., incuding such materials as methyl methacrylate, Plexiglass, Lucite, cellulose acetate, laminated safety glass.

In use, the entire piece of plastic can be dipped into a tank containing Protecto-Kote, drained, and then allowed to dry. Special materials are now available for brushing or spraying. Coverage is 200-sq.ft. per gallon and one coat is sufficient.

Some of the merits claimed for this protective coating are:

1) Great saving in time, compared with paper coverage.

*Announcing—*

# ROCKLOID

## A NON-CRITICAL ENAMEL

No need to wait for the return of alkyds. Here's a superior baking enamel with no critical materials in its formula. Available now for war contracts and essential civilian uses.

Rockloid, non-alkyd synthetic, possesses:

1. Extreme hardness with flexibility
2. Top notch adhesion—no flaking
3. Excellent resistance to salt spray, humidity, alkalies and solvents
4. Fine appearance and color retention.

For full information send for Technical bulletin on ROCKLOID.

**NOTE:** ROCKLOID may be had also in wrinkle finishes.

Our laboratory facilities and specialized personnel are at your service.

SINCE 1870

STANDARD VARNISH WORKS

2600 Richmond Terrace
Staten Island, New York

2600 Federal Street
Chicago, Illinois

2) Transparent, permitting easy inspection of plastic and allowing light to enter interior of plane during assembly.

3) Easily applied; one operator can dip material for ten large bombers per day (about 500 pieces).

4) Water soluble and easily removed. No cleaning or polishing of plastic is required after removal of Protecto-Kote.

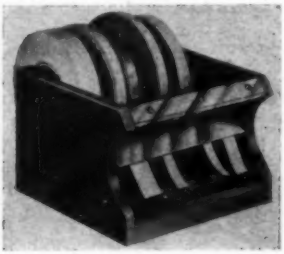
5) Does not cause crazing.

6) Plastic covered with Protecto-Kote can be stacked, handled and delivered to assembly lines without use of flannel protecting cloth or other means of protection between the pieces.

Protecto-Kote can be used in any industrial operation necessitating protection of plastic surfaces during fabrication.

## Handy Tape Dispenser

"Tapemaster" is a tape dispenser for paper, cellophane or cloth industrial tapes, a new product exclusively distributed by Bauer & Black, Division of The Kendall Co., 2500 S. Dearborn St., Chicago 16, Ill.



**Dispenses tape easily, quickly, safely.**

The cutting knife is attached to a rocker arm which provides a braking surface to grip the tape while the desired length is flicked off against the cutting edge. As the brake releases, a short tab of tape is ejected for the next use. The tape is wound on a 3-in. inside diameter core.

## Non-Slip Floor Coating

Saf-T-Dek is a material for coating steps on utility stairways, passageways, ships' decks and other areas where it is important, in the interest of safety, to have a non-slippery surface.

Saf-T-Dek is a product of the war. It was developed originally to help make footing safer on shipboard. Men on ships, where the walking areas are often wet or where oil happens to be spilled, are provided with sure footing with Saf-T-Dek. Now Saf-T-Dek is available for civilian use.

Saf-T-Dek comes ready for use and is applied with a trowel to a thickness of about 1/32-in. It is a tough, tenacious material, sticks to practically any surface — wood, steel, concrete, even glass. On drying it imparts a skid-proof walking and working area. Even when the Saf-T-Dek area is wet or covered with oil emulsion, it is still not slippery. It is available in two standard colors—tile red and concrete gray. May also be had in a spark-proof type, where non-sparking floors are considered necessary. The manufacturer is Truscon Laboratories, Caniff & G. T. R. R., Detroit 11, Mich.

## Portable Electric-Heated Hot Wax Dip Tanks

To answer the increasing demand for a wider variety of hot wax dip tanks to meet Army-Navy Specifications for packaging for overseas shipment, the Aeroil Burner Co., West New York, N. J., has developed two new electrically heated, portable additions to their current equipment in this field.

The first, Twin Waxmaster, was engineered to meet the needs of those who are wax dipping and, in addition, require facilities for heating wax for spray lines. This portable, electrically heated unit features two hot wax dip compartments in one tank. First compartment may be used for melting wax for spraying (1½-in. draw-off cock and outlet for spray

## The Chronicle of the Corrugated Lining

Spinning the metal into proper shape for a spun alloy steel bottle which formed an essential part of a hydraulic operating system of war plants, resulted in small corrugations on the interior surface of the bottle. A rubber bag fitted inside this bottle. Inflated and deflated by air pressure, sometimes as high as 3000 lbs. per sq. inch, you can readily appreciate what the small corrugations did to the outer surface of the rubber bag. Our problem was to design a coating that would smooth out the corrugations and provide a slick, glass like interior surface against which the rubber bag could move. The coating had to be tough. It had to resist penetration of a hydraulic oil as well.

HORN produced, not only a material with sufficient filling qualities to form a level surface and at the same time provide the high gloss required for a low co-efficient of friction, but a special system for finishing as well.

Then followed exhaustive tests. Among these was one for adhesion and toughness of the film which we will briefly describe. Several of the alloy steel bottles were set up on a target range and 50 calibre machine gun bullets fired thru them. After this firing, the steel bottles were examined to see whether our product had split or cracked beyond the point of immediate contact of the bullet and also to see whether the film had been chipped off by the terrific impact of these bullets. Neither of the two failures had occurred!

Even when a piece of metal was separated by the bullets from the rest of the bottle it took with it its own protective coating in perfect condition. This system of coating is being used with uniform success in the lining of thousands and thousands of these alloy steel bottles.

HORN designed the finish and the method.

**A. C. HORN COMPANY**

PRODUCTS FINISHING DIVISION

LONG ISLAND CITY 1, NEW YORK

CHICAGO • HOUSTON • LOS ANGELES

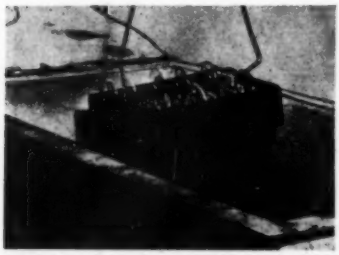
line are provided for). Individual thermostats in each insulated compartment, permit positive temperature control from 100° to 550°F.

The second new hot wax dip tank, Waxmaster Senior, is a larger adaptation of the portable, electrically heated Junior Model that has found widespread acceptance in industrial and governmental protective coating work. In response to the demand for larger dipping facilities this Senior tank offers a dipping space of 25x25x9¾-in. and will, it is claimed by the manufacturer, safely heat and melt up to 24-lbs. of solid wax in 50 minutes without discoloration or scorching.

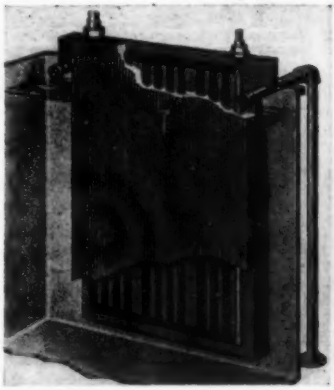
The two models are equipped with dip baskets, heavy duty grills, built-in thermometers and thermostats giving automatic heat control from 100° to 550°F. While both models are mounted on casters to permit swift wheeling of the unit where and when needed on any 110 or 220-volt line, skid-mounted units without wheels may also be obtained.

## For Heating Solutions in Tanks

The National Carbon Co., Inc., New York, N. Y., has developed a compact and sturdy new type of corrosion-resistant "Karbate" heat exchanger to meet the need for a chemically inert, mechanically strong heating (or cooling) unit for use in pickling tanks and other metallurgical applications. The "Karbate" material from which



Loaded tray above dip cleaning tank.



Cut-away sections reveal interior arrangement of heat exchanger in tank.

the heater is made is an impregnated graphite impervious to liquids under high pressures; it possesses high heat transfer values and is resistant to practically all acids, alkalies and solvents.

The exchangers are of plate type, employing the principle of extended, or corrugated, surface to attain maximum heat transfer area without bulkiness. Installation requirements and economical manufacturing methods caused National Carbon Co. to adopt four standard design groups incorporating both parallel and series flow channels, thus making possible 30 different combinations to meet the widest range of heating and cooling requirements.

Small and interchangeable, the units are designed so that they can be readily adapted to various sizes of tanks. They can be mounted in multiple or single units and need little space in the tank.

## *Finishine Enlarges Plant*

To take care of an increased volume of business, Finishine Laboratories, Inc., Syracuse, N. Y., has been granted permission to build a large warehouse.

VICTORY
WRINKLE
FINISHES
without CHINAWOOD OIL and also without ALKYD RESIN
With the main source of chinawood oil in enemy hands, temporarily, our research laboratory has developed a good wrinkle finish without this critical material. Our laboratory has also developed another good wrinkle finish without the use of phthalic alkyd resin, as required by WPB order M-139, Direction 2, dated May 26, 1944, due to the country's shortage of phthalic anhydride. Both of these finishes have been highly satisfactory. Our Victory Wrinkle Finishes give results similar to our well known Duart Wrinkle Finishes and can be successfully used in production. Our experience proves that they provide a tough, durable finish of the desired pattern and cover surface imperfections in a single coat, using ordinary methods of application. Your inquiry is invited.
Formula for a quick "Finish" Buy more WAR BONDS
M & W
MAAS & WALDSTEIN COMPANY, NEWARK, N. J.
PRODUCERS OF LACQUERS, ENAMELS, SYNTHETICS AND SPECIALTY FINISHES FOR ALL PURPOSES
BRANCH OFFICES & WAREHOUSES: 1658 CARROLL AVE., CHICAGO, ILL. • 1228 W. PICO BLVD., LOS ANGELES, CALIF.

## Anti-Barnacle Paint

A resin chemical developed by Hercules Powder Co., Wilmington, Del., is helping to lower the Navy's "barnacle bill"—the cost of keeping boats in drydock while the barnacles are scraped off their hulls.

New anti-fouling paints currently being tested contain poison that prevents barnacles from cementing themselves to a ship's hull. The Hercules resin, Hercolyn, acts as a plasticizer in these paints, keeping them open and soft, leaving the poisons free to protect the surface of the ship. sel.

These anti-barnacle paints are being developed to combat one of the oldest problems of the sea, for barnacles can cut a ship's speed by 25%. A growth of barnacles can weigh as much as 30 tons on the hull of a 10,000-ton vessel.

## Abrasive Round Cord

What looks like a medium stiff round cord, wrapped spirally with abrasive cloth, is a new development announced by Minnesota Mining & Mfg. Co., St. Paul, Minn. The manufacturer calls it "Spiral Wound Abrasive Strip." It is available in a wide range of grits, in diameters of 1/16 to ¼-in., and in lengths of 4-in. and shorter up to 12-in.

Constructed of Elek-Tro-Cut Three-M-ite Cloth, the center is reinforced so that you can bend it over, then reach down through a center and thread it through an oil hole or opening that has been causing a smoothing or cleaning problem.

## Hercules' Cellulose Products Plant Expands

Clark B. Kingery, assistant manager of Hercules Powder Co., Parlin, (N.J.) chemical plant, has been named manager of the Cellulose Products Department plant just established at Hopewell, Va.

Mr. Kingery will assume a position created by a proposed 60% expansion in the ethyl cellulose manufacturing facilities at Hopewell. Included in this expansion, which was brought about by increased demands from the Army and Navy, will be the construction of an ethyl chloride production unit for the conversion of by-product materials of the ethyl cellulose plant.

## P.P.G. Co. Acquires Part of Canadian Firm

The Pittsburgh Plate Glass Co., Pittsburgh, Penna., has broadened the scope of its activities in the paint field by acquisition of a substantial interest in The Murphy Paint Co., Ltd. of Canada. Established over 20 years ago by Harry W. Thorp and Louis Hambrock, The Murphy Paint Co. operates factories at Montreal and Windsor, numerous branch warehouses and offices throughout Canada, and has become one of the most important paint manufacturing and distributing concerns north of the border. Mr. Harry W. Thorp will continue as President of the Canadian company.

## Howard DeVilbiss Elected President of DeVilbiss Co.

Election of Howard P. DeVilbiss as president and general manager, and of Allen D. Gutchess as chairman of the board and active senior executive of The DeVilbiss Co., Toledo, Ohio, was announced recently following a meeting of the Board of Directors. The new president had served for several years as vice president of the company, a leading producer of medicinal and perfume atomizers, spray-painting equipment, exhaust systems, air compressors, hose and connections. Gutchess has been president of the firm since 1929. As board chairman, he succeeds W. M. Booker, who will continue as a member of the board.

Coincident with these changes, Frank A. Bailey, vice president and general manager who has been with the company 34 years, is retiring because of poor health. Roy A. Guyer continues as vice president in charge of sales and becomes a director of the concern.

With the election of Howard P. DeVilbiss, the third man of that name heads the corporation. Son of the late Thomas A. DeVilbiss, president during one of the corporation's greatest periods of expansion, and grandson of Dr. Allen DeVilbiss, who founded the business in 1888, he is 36 years old.

## V-692 BLACK IS AGAIN AVAILABLE

**A brilliant black for pharmaceutical and food packing. Will withstand acids and alkalis, also food acids and alcohol.**

The efficient metal coating, developed in the Watson-Standard Laboratories, is a black that retains its brilliancy through all the abusive processes of fabrication including deep drawing and sterilization. It can be used directly on metal without sizing.

If you are designing a post-war product either of metal or other material we will be glad to develop a special prescription finish for it. Write us for detailed information.

# WATSON-STANDARD CO.

Manufacturers of
PAINTS · VARNISHES · INDUSTRIAL
FINISHES AND LITHOGRAPH COATINGS

FACTORY AND GENERAL OFFICES:
PITTSBURGH, PA. · WAREHOUSES:
BOSTON, BUFFALO, DETROIT, NEW YORK

TOUGH JOB HEADQUARTERS
℞ **Prescription Finishes**
Give us your metal coating problem. We guarantee you an answer based on your conditions, and not just a standardized formula.

# Questions and Answers

## Underwater Cleaning and Metal Polishing

We would be very much obliged if you could furnish us with any information on a process of which we have heard and which we would like to investigate further. So far as we are able to estimate, it is a polishing method in which the parts are immersed in an abrasive-bearing liquid, and the liquid is agitated by supersonic* means. We understand, from what little we have heard, that this method is extremely effective, but thus far we have been unable to obtain any actual information. Anything you can do for us in this matter would be very much appreciated.—R. CORP.

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We have discovered a concern which is perhaps the one that has developed and is promoting the process you mention. It is Vapor Blast Mfg. Co., whose address we are sending you by letter. Quoting from some of the company's literature:

"Primarily, the vapor-blast honing process is based on the use of fine abrasive mixed with a chemical emulsion, discharged by compressed air against the metal surface to be polished or finished. The mixture of abrasive and emulsion is discharged at the rate of 3200-ft. tip velocity per second, discharging approximately 10 to 15-lbs. of material per minute. The process has been tested and found satisfactory on rough machined, ground and polished parts. It has been used successfully on supercharger impellers, art rods, bearing races, guide vanes, connecting rod bolts, gears, splines, gyroscope and other instrument parts. The vapor-blast method does a satisfactory job on threaded parts, getting into the bottoms of the threads and achieving a satisfactory finish.

"The method known as vapor blasing was originated and developed by A. H. Eppler at the bottom of the business curve in the recent depression. At that time he built the first experimental machines, with the purpose in mind of cleaning structural plate. As a part of this cleaning and scale removal, a rust-inhibiting chemical was used to deter oxidation on the virgin metal for some time after exposure. The slogan, 'Water to Eliminate Dust, Chemical to Prevent Rust,' was established on the results obtained at that time.

"In 1940, Vapor Blast Mfg. Co. had a standard size unit, which was complete and could be sold to industry in general. The company was then organized and started to manufacture and sell these machines in various parts of the U. S. and Canada.

"Along with the development of Vapor Blast, a fundamental premise was discovered that we could

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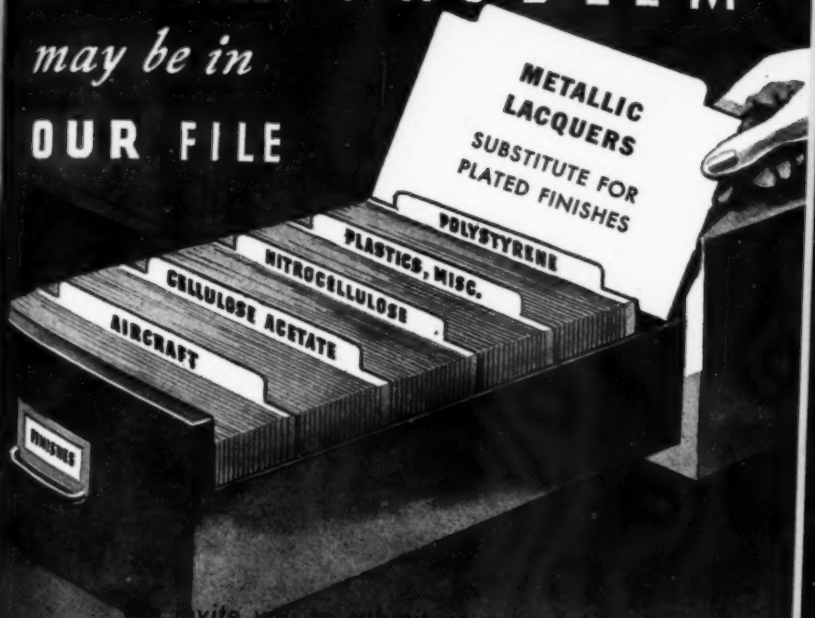
*Supersonic: Pertaining to high-speed vibrations or waves.

*The answer to*

# YOUR PROBLEM

*may be in*

## OUR FILE




We invite you to submit your urgent or difficult finishing problems to our staff of experts for quick action.

# RANDOLPH

## FINISHING PRODUCTS CO.

DOPES • LACQUERS • ENAMELS

use particles smaller in mesh than normal silica sand. . . .

"Vapor-blast liquid honing process has already been used on all types of parts from pump impellers to the smallest type of instruments, gears and parts. It has also been used for burring, polishing, preparing parts for chrome plating and anodizing. Some of the burring operations have been quite intricate. Naturally a combination of burring and polishing can be done with this process.

"Some of these operations are done in stages—a coarser material at the beginning, with the next stage a little finer, and the third stage the final finish.. This makes the process quite flexible.

"The vapor-blast cabinet design is so flexible that it can be worked up into an automatic conveyor-type cabinet using turntables, fixtures and belts. Tumbling baskets can also be installed in these cabinets. There is practically no end to the types of fixtures and automatic equipment that can be built into these units. The flexibility is quite variable. It is possible to produce a 1000 finish combination with one unit by a variation in abrasive, compressed air pressure, nozzle size, abrasive mix and the water and chemical emulsion.

"Tests have proved that a high degree of accuracy can be obtained with the fine-mesh abrasive. We have polished parts that had a tolerance of less than 1/10 to 2/10 of a thousandth of an inch. This is obtained by controlling the amount of abrasive mixed in with the chemical emulsion. For example: The most efficient combination would be 50-lbs. of abrasive in a dry state and 50-lbs. of water. This would give a 50/50 mix by weight. Supposing we were to process parts where the tolerance limitations were 1/10 of a thousandth. We would change our process by mixing 30-lbs. of abrasive with 70-lbs. of water. This would cut down the abrasive action and still polish to a high degree of tolerance."

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## Dip-Coating Auto Tools

Can you help us on this inquiry which was received through one of the banks offering the gratis Research Advisory Service? It comes from a manufacturer in the Akron, Ohio, area and is specifically stated as follows:

"We are interested in learning about a modern method of coating small automotive tools with paint. These tools do not exceed 30-in. in length and a method of dipping has been suggested, one coat being sufficient."

Your comment and suggestions will be appreciated. However, if I have misdirected the inquiry, can you advise me whom to contact for assistance?—L. B.

---

In reply to your letter of July 17, wherein you include an inquiry about dip-coating small automotive tools: Yes, the articles can be coated by dipping—and it is possible to put on only one coat of paint. However, something must be sacrificed when only one coat of paint is applied to the bare metal of new products. You either sacrifice enduring adherence of paint to the metal, or you sacrifice that smooth glossy appearance that is usually desirable. If your client does insist on a one-coat job, he might consider either an air-drying lacquer or a synthetic bake finish.

The 2-coat job usually includes

# Eye Catching...

If you saw these lovely bathing beauties on the beach, you'd probably stop and look again! When someone sees your product displayed, do they pause for a second glance?

Perhaps the true beauty and utility of your product is concealed from the prospective buyer's eye by a dull, unflattering finish. For real eye-appeal, let our Creative Studio design a special finish for your product . . . the finish it deserves.

If present production is limited to war products, we are supplying protective coatings that meet all U. S. Government specifications.

*Your inquiry will receive our prompt attention.*

*At Your Service with Quality*

ROCKFORD VARNISH Company
ROCKFORD, ILLINOIS

*Manufacturers of Protective and Decorative Coatings*

a thin flat primer coat which adheres well to the metal surface and provides an ideal base for the enamel coat, which can be "full body" with rich color and glossy luster. The 2-coat paint job will look nicer for a longer time, and the paint is less likely to chip or flake off the metal surface.

With this letter we enclose tear sheets of articles about dip-coat painting. These articles give considerable information and we believe they will be of interest and value to your client.—Ed.

## M. A. Kindig Advanced at Sherwin-Williams Co.

M. A. Kindig has been appointed assistant general manager of the industrial division of The Sherwin-Williams Co. Mr. Kindig has had a varied industrial experience in the

M. A. Kindig, now Asst. Gen'l Mgr. of the industrial division of the Sherwin-Williams Co. at Cleveland.

company's Cleveland, Chicago and Washington divisions. Duties in his new position will revolve around the company's efforts to better acquaint industry with its industrial finishing services. He will also play an important role in forthcoming plans to re-convert the company's activities to peacetime products. Mr. Kindig will make his headquarters at Cleveland, Ohio.

## Industrial Finishers' School

The DeVilbiss Co., Toledo, Ohio, announces that four one-week sessions in the second half of its 1944 School of Spray Painting will be devoted to the instruction of industrial finishers. With finishing men in plants everywhere hard-pressed to meet the demands of wartime jobs, and eager to learn faster methods, all sessions are expected to attract large enrollments.

Sessions start July 17, August 14, October 16, and November 13. DeVilbiss-trained spray painting experts will be in charge of classroom instruction and shop work.

## Sterling Tool Products Co.'s Postwar Plans

One of the highlights at a recent national convention of district managers and executives of the Sterling Tool Products Co., Chicago, Ill., was an announcement of the Company's new 100% Selected Distributor Policy and a booklet fully and frankly setting forth all the conditions involved or implied in such a policy. The new booklet tells just what Sterling is doing for its distributors and exactly what cooperation they may expect after the war.

The company has completed "tooling up" new Sterling present-and-postwar sales organization—a fully-trained big league sales team, ready to take the field the minute Uncle Sam says: "Play Ball." The present year is being used for further development of plans and new work.

## Rheem Research Products Open California Branch

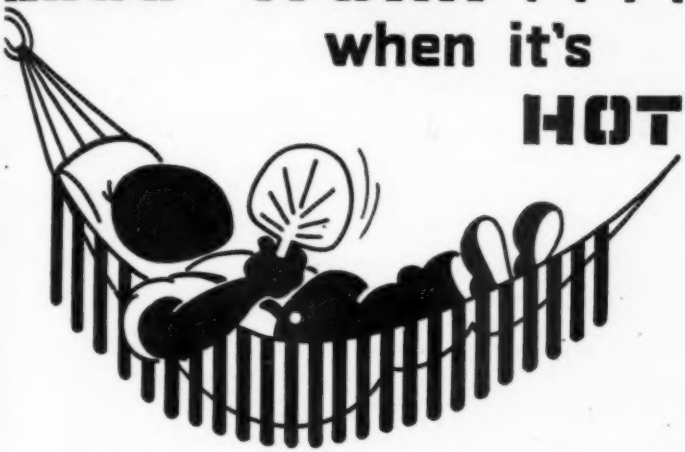
Rheem Research Products, Inc., Baltimore, Md., announces the acquisition of a West Coast research and manufacturing branch, and the appointment of three new distributors in other territories. The executive offices of the West Coast plant and laboratory are at 714 W. Olympic Blvd., Los Angeles 15, Calif.

Currently, the chief product of Rheem Research is "Iradite," a treatment in several colors, for corrosion-proofing zinc and cadmium surfaces. The company maintains a branch office at 20 E. Jackson Blvd., Chicago.

## Non-Priority Paint Drier

Drying more than 200,000,000 gallons of paint, enough to cover the State of Rhode Island with two coats, is the two-year record set by a group of paint driers, known as "Nuolates," and used by paint manufacturers as a wartime substitute for the precious, high-priority metal naphthenates, was the unusual fact revealed by Mr. H. M. Johnson, Vice-President, Nuodex Products Co., Elizabeth, N.J.

# LESS WORK . . . . when it's HOT



HOT LACQUER saves manpower because only half the number of coats are needed. It contains more solids—less volatiles . . . that is why it saves finishing time . . . makes it easier to meet tough production schedules.

Investigate this process for both immediate and postwar production. Ask your supplier.

**Nitrocellulose Lacquer—the postwar finish on today's war-products.**

*CSC makes no lacquers or thinners but supplies solvents and plasticizers to manufacturers of protective coatings.*

CSC

## COMMERCIAL SOLVENTS *Corporation*

17 East 42nd Street, New York 17, N. Y.

Industrial FINISHING

Distributed monthly to finishing room and paint shop foremen, production superintendents and company officials of metal-working, woodworking and miscellaneous industrial plants where production cleaning and finishing are major operations in parts and products manufacture.

•

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# Editorial

## Design, Texture, Color of Postwar Products

Plans for postwar products will give considerable emphasis to attractive design, surface texture and color. Surface cleaning, surface preparation and surface coloring—however the latter is attained—will rate high in importance in the manufacturing process. In the matter of color treatment particularly, plans will need to make plenty of allowance for changes and variations which are sure to come later.

Of course, when certain civilian products again become available, the first supply will probably sell quickly regardless of outward appearance—just so the items have or seem to have dependable utility value. Later, however, when sales competition has had a chance to enter the picture—when several different makes of an item are being offered—people will begin to be influenced more strongly by design, texture, color and various other refinements. These features will then become the dominating factors in volume sales of most products. Manufacturers' plans should be made accordingly.

## Will it Work for Us? Is it What We Want?

Above are two questions frequently asked when a different material or equipment or process is suggested for consideration. These questions are important and timely. They are entitled to careful thought. Answers should be complete and backed up with specific accurate information—perhaps including demonstrations.

Some concerns, like some individuals, become favorably impressed with a material or certain equipment and buy it without investigating its full possibilities, its limitations, or perhaps its lack of economical adaptability to their present or future needs. Even if it is working satisfactorily in A's plant, it still may not be especially suitable or economical for B's factory. There may be features about

After a war-enforced absence, this much-wanted finish is available again. Are your requirements for military or essential civilian uses? Your orders can now be filled for Hilo No. 916 Black Crystal where the need coincides with priority regulations.

*You can have Hilo No. 916 Black Crystal if required for these uses:*

**Army**
**Navy**
**Marine Corps**
**Coast Guard**
**Maritime Commission**
**War Shipping Administration**
**Lend Lease**
**Vessels operated under Warrants of Maritime Commission**

*Or if the end use is for:*

**Aircraft**
**Watercraft**
**Armament and Weapons**
**Ammunition**
**Communications Equipment**
**Vehicles**

HILO

SEND YOUR ORDER WITH PROPER DATA AS TO USE

**HILO VARNISH CORPORATION**
42-60 STEWART AVENUE BROOKLYN 6, N. Y.

2420 Washburne Ave., Chicago 8, Ill. Park Sq. Bldg., Boston 16, Mass.

it which, for B's particular conditions, make it less desirable than something else. B should make sure that he finds this out before he buys.

A reputable company with a product of merit will welcome a prospective customer's questions, and will supply facts and figures which should show clearly whether or not its product fits into any particular company's present and future requirements satisfactorily.

In the course of uncovering various facts and figures to answer, "Will it work for us? Is it what we want?", a company may discover that it needs not only a change in material or equipment but something additional. The concern may need a completely changed set-up. If so, this is something that should be discovered at earliest possible moment.

While it isn't wise to plan on buying or adopting something different too quickly, it is also unwise to refuse to entertain ideas or suggestions for products or methods that differ from those we are now using. After all, we are all striving for profitable and permanent improvement, but let's try to make reasonably sure that the change is what we want before we adopt it.

---

## *Variation from Conveyor —The Merry-go-Round*

While conveyorization of production lines to carry products through such processes as metal cleaning, product painting and accelerated drying, has been widely adopted in industry, there are a few instances where a merry-go-

In June of this year the Lea Mfg. Co., Waterbury, Conn., was awarded the Army-Navy "E" flag for excellence of achievement in the production of products useful in the war effort. Those in the picture, left to right, are: Major Arthur H. Murtha, USA; Mayor Monagan, City of Waterbury; Robert S. Leather, President of The Lea Mfg. Co.; Ernest Martin, Employees' Committee; and Lieutenant Raymond Smith, USNR.

# Write Finish to Your Finishing Problems

**SELECT SEA-LAC LACQUERS**

The wide range of special SEA-LAC coatings covers the whole lexicon of electroplating applications. There's a SEA-LAC finish for every metal—including bronze . . . and in every color. All SEA-LAC finishes are subjected to continuous checks and double-checks to assure dependable performance. When you choose SEA-LAC you avoid all risk and guesswork. Select SEA-LAC! Submit your problem—we'll gladly help you lick it.

**DURALAC CHEMICAL CORPORATION**

LISTER AVENUE, NEWARK 5, N. J.

round set-up will work as well or even better. The travel of the work in process is around a comparatively small circular course. Around this course you have the work stations for operations to be performed. Stations may include metal cleaning, rinsing, etc., by dipping; paint application by dipping, flow coating or spraying; and accelerated drying by passage through heating tunnels or past ventilating fans.

The merry-go-round can be an overhead affair driven by power and arranged to start and stop at regular intervals, or it can rotate slowly but continuously. In the latter case, racks of items being processed could be taken off and replaced at some of the stations. The entire merry-go-round could be arranged to raise and lower or it could be so designed that only certain outer sections of it would be capable of being raised and lowered.

There are possibilities here that could make such a set-up remarkably efficient and economical in certain manufacturing plants. It is a point to keep in mind when planning for the future.

---

## *Merits of Conveyor in Finishing Room*

★ The conveyor has long been recognized as a real labor saver in the production finishing of furniture. Conveyorization not only means less labor, but at the same time it enables the worker to do his job easier and therefore better. Now, with our present critical shortage of male labor, the conveyor is really a boon to the foreman finisher who must depend mostly on female labor.

Most women employees are not able to do as heavy nor as strenuous work as men. Here is where the conveyor comes into its own. The conveyor makes unnecessary the lifting of heavy pieces of furniture onto benches, spray tables, etc. It eliminates the pushing, by hand, of heavy pieces of furniture from one work station to another in the finishing room. This operation is very exhausting to most female workers. The conveyor keeps the furniture moving systematically through the finishing process and eliminates jams in different places in the finishing room.

A well arranged conveyor system enables the foreman to place his employees at the proper places and work stations, so that each employee will know exactly what her job is. In these days when we are obliged to carry on with so mush inexperienced help, a foreman can direct an experienced employe to go along the line, inspect each operation and train the new employees at the various work stations along the conveyor.

The conveyor also enables the foreman to keep his finishing room floor clean. No accumulation of filler, varnish, etc., pile up on the floor as the result of pushing newly sprayed pieces across the floor. This eliminates a lot of cleaning and scraping of floors and also does away with frequent oiling of floors which makes the floors so slick that people are liable to suffer serious injuries from falls.

A clean floor always makes a

---

★ Guest Editorial . . . Many readers can write an excellent editorial — two or three paragraphs that present a timely suggestion or valuable idea which will stimulate real thought on a live subject. The Editor welcomes guest editorials and pays for those that are published.

## NORMANDY

AIRPLANES
GUN STOCKS
BOMB SIGHT BOXES
TOOL CHESTS
MARINE PARTITIONS
RADIO INDUSTRY, ETC.
SKIS
INSTRUMENT BOXES

ASST. SEC. OF WAR, ROBERT P. PATERSON recently was quoted as saying that we have four times as much firepower as the enemy on the Normandy Peninsula. This superiority in firepower is overwhelming enemy strongpoints and breaking down all counter attacks. It is paving the way to Paris and Berlin for American doughboys.

American industry has made the United States the great Arsenal of Democracy. The production genius of American industry has given our men this superiority in firepower and quality of weapons and, at the same time, has kept our Allies well supplied with all kinds of war material.

Men and women of American industry must keep the wheels turning until complete Victory is ours.

*Listed here are a few of the war products now being coated with our materials. Phone, wire or write and let one of our finishing experts help you "keep production rolling."*

BACK THE INVASION . . . . . BUY WAR BONDS

**The Lawrence-McFadden Co.**

**Headquarters for Fine Finishes Since 1875**
**7430 STATE ROAD PHILADEPHIA 36, PA.**



## Just for the Record

**CEL-U-LAK**

A complete line of cellulose derivative lacquers and enamels

**FORM-A-ROC**

A unique line of quick-baking, tough adhesive synthetic enamels

**Remember these names.**

***After V-day they will mean something to you.***

**The Varnish Products Co.**

5208 Harvard Avenue Cleveland, Ohio

better and more healthful place in which to work and female employees generally appreciate and want clean working quarters. And, of course, this helps to keep up the morale in the finishing room.—H. W. CHESTER.

## Correct Spraying Saves Paint; Time

★ Here are six rules you should observe in your spray painting:

1) Keep your spray guns clean. Follow the rules the manufacturer gave for cleaning.

2) Keep all auxiliary equipment clean to insure best results.

3) Use the correct equipment for each job; for example, automatic spray where possible; use extension nozzles or special guns or nozzles for spraying difficult places, narrow pieces, etc.

4) Strain your paint; thin it according to the manufacturer's specifications, and use the best (lowest) line and tank air pressures according to the viscosity of the paint or the speed required to do the job.

5) "Trigger" the gun at end of each stroke. Insist upon your operators holding the gun at right angles to the work. This avoids "fanning" and can save up to 10% of the total paint used.

6) Allow a definite amount of paint for each job. This challenges the workman to spray efficiently.—K. M. S.

---

One of the jobs being done by paint in the war is keeping ship bottoms free of algae, barnacles, seaweed and other marine growths which reduce ship speed. Special anti-fouling paints are used for the purpose.

## Air Conditioning is Welcome by Finishers

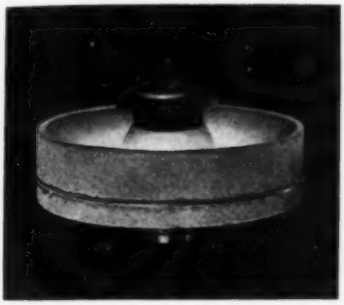
A postwar boom in industrial air-conditioning is predicted. Some months ago the manager of air-conditioning controls division of the Minneapolis-Honeywell Regulator Co. stated that according to a survey of industrial engineers, the control of temperature and humidity in plants building airplane and tank engines has resulted in an impressive increase in production involving high precision, and that all indications are that postwar construction will take into account this new trend.

We hope this is true. Product painters, finishers, metal cleaners and those who have anything to do with the control of paint drying, have long wanted satisfactory air conditioning in their departments. It is definitely needed—not as a luxury—but as a recognized aid to cleaner, better quality workmanship with fewer rejects and delays in production. What is needed is clean air, plus closely controlled temperature, humidity and circulation.

These departments of a manufacturing plant should be independent of and unaffected by any contaminated air elsewhere in the plant, or by weather conditions outside. Before application, during application, and immediately after application, paints, lacquers, varnishes and synthetic materials are affected by the condition of the atmosphere in the paint room. Their viscosity, cleanliness, flowing and leveling characteristics, film thickness, adhesion to surfaces to which they are applied—all of these and more are directly affected by the air in the room where they are used. Air control is an important factor in paint results.

# "INFRA-RED"

## Cuts Drying Time 100% Reduces Gas Cost 25%



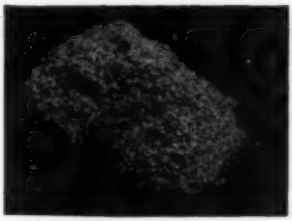
The Brundage Company, like all Burdett "Infra-Red Principle" Gas Burner users, testify to unbelievable savings. Here's what they say: ". . . jobs we used to leave in the oven 30 minutes we are now getting a satisfactory baking job done in 15 minutes" and ". . . Checking our gas bills for the last six months, we find that they are 25% less than any monthly bill previous." Investigate this revolutionary heat process in connection with your requirements.

COMPLETE INFORMATION ON REQUEST.

See Burdett Burners Demonstrated at the Metal Congress

21 NORTH LOOMIS STREET, CHICAGO 7, ILL.

BURDETT MANUFACTURING CO.
*Infra-Red Gas Burners*



# *This is* FLOCK

**Perhaps your product can incorporate it to advantage**

Made in various fibres, lengths and colors, flock is adhesively incorporated into the surface of products for changed appearance or texture, and for functional purposes. State proposed use and we will advise.

**FUNCTIONAL**

Used in airplane, auto and numerous other industries for—

SOUND DEADENING — TEMPERATURE INSULATION — INTEGRAL GASKETS — SHOCK-ABSORBING SURFACE — NON-MAR SURFACE PROTECTION.

**DECORATIVE**

Applied in various lengths and colors to wood, paper, cloth, metal, etc., the following effects are produced—

SUEDE LEATHER—FURNITURE UPHOLSTERY FABRICS—AIRPLANE AND AUTO UPHOLSTERY FABRICS — VELVET — VELOUR — MOHAIR.

***Request Samples and Prices***

**RAYON PROCESSING CO.** of R. I. INC. 55 TREMONT STREET CENTRAL FALLS, R. I.

**Indium, the Vitamin Metal**—This observer recently had an opportunity to study the fascinating work being done by the Indium Corp. of America. As you probably know, the metal is being widely used to harden the bearings in our airplane engines, and to resist corrosion. Bearings that formerly wore out in less than 200 hours of service now stand up for 800 hours and more.

Indium will have many postwar uses. One percent added to silver, for example, greatly reduces tarnishing. It is certain to be used as a decorative finish on jewelry cases, compacts, bracelets, clock faces, and automobile reflectors. Experimental work is also going on at the present time, directed towards plating glass and plastics with Indium. The metal is currently priced at $7.50 a troy ounce, but a little goes a long way.

* * *

**Jeep of all Trades**—According to to Ward M. Canaday, chairman of Willys-Overland Motors, over 8000 inquiries have been received from Britain alone concerning the possibility of purchasing our Jeeps soon after victory has been won. This versatile little car has been winning friends and influencing people in every corner of the globe.

The Jeep has been fitted out with iron wheels to act as a donkey engine. It has served as auxiliary tractor, mosquito sprayer, and fire engine. A new sand Jeep, recently developed for Coast Guard patrol duty, should be an ideal vehicle for swampland areas in postwar work. This model is 12-in. longer than the standard design, and has 2-in. of additional clearance. It is also fitted out with special jumbo-balloon tires which act as "snow shoes" on soft surfaces.

* * *

**Norge Adding New Lines**—Hoping to nearly double its pre-war civilian output, Borg-Warner's Norge division is planning to introduce four new major products, in addition to its former array of home and office appliances. The projected items are home and office unit room coolers, automatic cycle washers, automatic clothes dryers, and home and farm quick-freez units.

According to Vice-President M. G. O'Harra, Norge has increased its productive capacity 40% to handle war contracts. The projected offerings should enable the company to make full use of these facilities, and to continue peak employment after conversion.

* * *

**Furniture Off 50%**—As these lines are written, a bleak picture of the short-term prospects for the furniture industry has been outlined by Richard N. Greenwood, president of the National Association of Furniture Manufacturers. In his opinion, military requirements for lumber and other essential materials will bring production for the next six months down to about 50% of last year's rate.

Greenwood, who is also president of the Heywood-Wakefield Company, notes that the furniture industry has gone virtually "scot-

# I. C. D. FORMULA NINE
## NON-INFLAMMABLE
## « wax free REMOVER »

**for paint, varnish, lacquer, baked enamel, adhesives**

**EASY TO APPLY—NO AFTER-CLEANING**

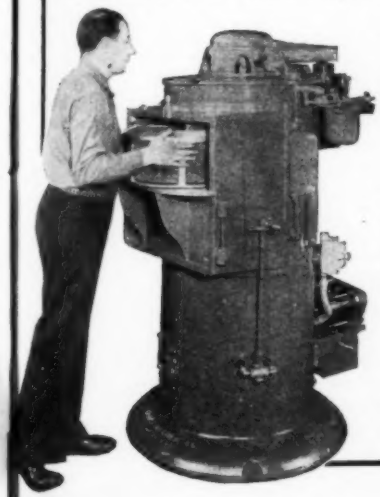
**ORDER TRIAL GALLON AT DRUM PRICE**

**I. C. D. FORMULA 9** is the standard of safety and quality . . can be sprayed or brushed . . doesn't raise grain nor discolor . . quickly removes all kinds of finishes and coatings . . costs less to use . . saves time, labor and material.

**SPECIALTY COATINGS**—I. C. D. Labs. have specialized in the formulation and manufacture of non-inflammable coatings and substitute finishes. If you have a tough coating or finishing problem send in your specifications, finishing schedule and requirements. Immediate action and a prompt reply promised.

**INDUSTRIAL CHEMICAL DEVELOPMENT CORP.**
347 MADISON AVE. NEW YORK 17, N. Y.

## INCREASED PRODUCTION AT A LOWER COST



**ON ESSENTIAL SMALL PARTS**

***30 loads per hour can be processed in Lacquer or Enamel with our No. R-200 up to 75 lbs. to a load.***

**RONCI "SPEEDIP" WHIRL ENAMELER AND COMBINED WASHER AND DRYER**

A combination dipping-whirling machine for coating large quantities of small parts. All operations are within the machine. Parts are dipped into coating material, raised and whirled. No additional tanks required. No cleaning when changing colors. Cuts costs and saves up to 90% of material.

***Washer and Dryer operates on same principles.***

Write for further information or submit samples to be coated.

**RONCI MACHINE CO.**
2 Atlantic Blvd. Centredale 11, R. I.

free" thus far in the war. For the long pull, he is distinctly optimistic about the peacetime future awaiting his fellow manufacturers.

* * *

**Pattern of Reconversion** — The problem centering around the disposal of government-owned war plants is a "bugbear" greatly exaggerated in the minds of many business men. At least, that is the contention of J. A. Livingston, editor of WAR PROGRESS, a weekly economic report issued by the War Production Board.

The marketable carry-over from the war into our peacetime economy is estimated at only fifteen billion dollars, says Livingston. In a country capable of producing goods and services at a $175 billion rate, he adds, the amount assumes a manageable size. The writer agrees, however, that clearly-announced policies are needed to relieve the business mind.

* * *

**Debunking Postwar Miracles**— Some sharp words were addressed recently to American manufacturers by Lawrence Valenstein, president of the Gray Advertising Agency, and a nationally-known marketing counselor. "Industry knows that it has put itself in hot water with its fantastic claims of extraordinary postwar product improvements," he said in the course of a Manhattan interview.

A few manufacturers have delicately suggested to the public that it might be more than a matter of months after the war before vastly improved models could be designed, tested, produced and distributed, Valenstein continued. "Unfortunately," he commented tartly, "everybody and his uncle expect quick postwar miracles."

**Fighting Rust** — Our Navy is warring on its ancient enemy—rust — with as mush ingenuity as is being displayed against the Japs. To this end, the Bureau of Ships is employing a new technique, called dehumidification.

The process makes a ship's interior air extremely dry when the vessel is being held in reserve, or inactive in readiness for duty. The theory is based on the knowledge that steel will not rust in the desert. Using an ocean-going "guinea pig" boat, six mechanical dehumidifiers are operated aboard the ship. In addition, a number of chemical driers and preservatives are being tested.

* * *

**Era of Light Metals**—Magnesium's future is tremendous, says Prof. James E. Dorn of the University of California, because it is one of the few metals offering an unlimited supply; it can be recovered from sea water.

In the opinion of Dr. Dorn, a member of the west coast university's mechanical engineering faculty, magnesium alloys may be too expensive for our small postwar automobiles. He contends, however, that they will be widely used in our peacetime trucks, trailers and streamlined trains. Germany was ahead of the United States in using this metal on military aircraft at the beginning of the war, says Dr. Dorn, but we have been making swift advances in this sphere since Pearl Harbor.

* * *

**Boom in Freezers** — Although modern quick-freezing is barely 15 years old, it is one of the fastest-growing developments in American life. Boyden Sparkes, well-known magazine writer, has published a provocative book—"Zero

Fine...Fine
Superfine!
Claremont Flock
Finely cut fabric particles, many colors, many types . . . fluffy, yet filling. Excellent for sound-proofing, insulation and surface protection. Also, applied decoratively to assimilate suede leather finishes, velvet, velour and mohair upholstery effects. Full details, samples and prices upon inquiry.
COTTON
WOOL
RAYON
CLAREMONT WASTE MANUFACTURING CO.
The Country's Largest Manufacturers of Flock
CLAREMONT, NEW HAMPSHIRE

Storage in Your Home"—which is devoted entirely to this subject.

Sparkes believes that our entire concept of living standards may be altered by this one process, with canning and dehydration of foods destined to decline sharply. Although freezers now range in price up to $1000, mass production may bring the cost of a medium-sized unit down below $200. And their efficiency will be stepped up through the introduction of better insulation, drawer-type construction, and new refrigerants.

* * *

**Eyes on Tomorrow**—One of the most thorough studies of peacetime markets has come from the United States Steel Corp., in an analysis prepared under the direction of George W. Wolf. The backlog of automobile demand this year will be 12,000,000 passenger cars and trucks, in the estimation of this astute firm.

"Big Steel" also believes that up to 1,500,000 dwelling units a year will be built for the first ten postwar years. "It is confidently predicted," continues the survey, "that within five years after the war one-half of the new single-family, detached houses will be of the prefabricated type." An interesting sidelight is the expressed belief that there will be a pronounced trend toward steel frames for barns and farm sheds, with prices competitive to wood.

# FINISH BAKING OVENS

- **ALL TYPES,** standard or engineered to suit your needs.
- **ALL SIZES** from smallest test units to large conveyors.
- **ALL FUELS** are adapted to Despatch ovens. Unique system assures fast, even baking and low operating cost.

***Write for Details Today***

**DESPATCH**
OVEN COMPANY MINNEAPOLIS

# MIRACLE

**5 Gallon BLUE BOY Model**

## PAINT REJUVENATOR

Restores Paints, Lacquers, Enamel Products and Pigment Primers, to original consistency in 3 to 10 minutes without opening the can. Available for Round or Square 5-gallon cans. Explosion-proof electrical equipment if desired. Also other units from ¼-pint to 50-gallon drum capacity available. Originators of Paint Rejuvenating equipment—ten years—thousands of satisfied users.

**Miracle Paint Rejuvenator Co.**
127 E. 9TH STREET ST. PAUL, MINN.


**What about Television?**—A spirited debate over the prospects for television developed at the recent furniture industry dinner at Chicago's Furniture Mart. James H. Carmine, vice-president of Philco Corp., forecast that television will be one of America's fastest-growing postwar industries, with table model receivers being offered for sale at $125 soon after the dawn of peace.

But J. J. Nance, vice-president of Zenith Radio Corp., sounded a more cautious note. It is his belief that it may take years to develop transmission facilities and commercially-sponsored programs to warrant the mass production and sale of such equipment.

* * *

**For Visitors**—Readers of INDUSTRIAL FINISHING are reminded that free tickets to leading radio broadcasts are available on request, by writing to: *Lawrence H. Singer, 130 West 86 Street, New York 24, N.Y.* Mutual Broadcasting System's WOR Guest Relations Dept. has been particularly cooperative. Other helpful sponsors include the Prudential Insurance Co., Model Smoking Tobacco, and the Fitch Band Wagon.

Recent arrivals at the Broadway theatres worthy of your attention are: "Ten Little Indians," a diverting and chilling murder mystery; and "Hats Off To Ice," the new skating show at Rockefeller Center.


**MISKELLA**
**INFRA-RED OVENS & APPLIANCES**
INSULATED - REFLECTIVE - SECTIONAL
BY
**INFRA-RED ENGINEERS & DESIGNERS**
1078 E. 40th STREET CLEVELAND, OHIO

***We sell lamps, too!***

# Classified Advertising

**Rate: 45 cents per line per insertion—minimum $1.35**

### POSITION WANTED

As Finishing Foreman or Service Man. 25 years' experience; 15 years as finishing foreman. Grand Rapids background. Prefer Pacific Coast. Address IF-106, care Industrial Finishing.

### POSITION WANTED

Man with 30 years success in Industrial selling field of Paint, Varnish, Lacquer, etc., to mfg. of all kinds, invites correspondence relative to securing a position. Reasons and full details will be given in first letter. If you are interested in securing a well-known, high-class, competent man, address IF-107, Industrial Finishing.

### POSITION WANTED

As salesman or service man with reliable paint and finishing materials company. 20 years' experience with paints and finishing materials. Have done quite a bit of service work, and some selling. Available immediately. Address IF-108, Industrial Finishing.

### LINES WANTED.

Fifteen years' experience calling on paint dealers, jobbers and automotive accounts in Southern California, Arizona and West Texas. Draft classification 1 C. Excellent sales record, business and financial references. Address IF-998, care Industrial Finishing.

### POST WAR PLANNING

Want to represent manufacturers in Southwestern States, on commission basis. Paints, Varnishes, Enamels, Lacquers, Synthetics, Brushes, Spray Equipment, Painters' & Paper Hangers' Tools and Equipment for Dealers, Jobbers, Industrial, Maintenance, Automotive and Aviation Trade. Have successful sales records for over 20 years. Will appreciate hearing from manufacturers of outstanding products. Address IF-109, care Industrial Finishing.

### FOREMAN WANTED

Woodworking Plant has opening for experienced Finishing Room Foreman. State full particulars in first letter. TEMPLETONE RADIO CO., Mystic, Conn.

### LACQUER CHEMIST.

We have an opening for an experienced chemist thoroughly familiar with laboratory control of raw and finished materials, both lacquer and synthetics. Good opportunity to join an expanding and progressive concern. UNITED LACQUER MFG. CORP., New England Mfg. Division, 78 Freeport St., Boston 22, Mass.

### INDUSTRIAL FINISHES SALESMEN

Wanted: One for Chicago and surrounding territory, and one for Cleveland and surrounding territory. Wanted by an old, well-established Eastern manufacturer of a complete line of lacquers, synthetics and other industrial finishes. Splendid opportunity for right men. Please state age, draft status, education, income expectations, and experience. When replying, address IF-110, care Industrial Finishing.

### WANTED.

Varnish and resin formulating chemist for industrial technical coatings. Job is permanent and location is in Western Pennsylvania industrial area. Give experience, education and family and draft status. War Manpower clearance possible as this is a war plant. Address IF-111, care Industrial Finishing.

### MANUFACTURERS!

Prominent Furniture Contractor would like contacts with woodworking manufacturers equipped for Furniture or Kindred items. We contract for complete or partial output. Some stock of raw materials for current production, but desire making connections for post-war period. Can furnish financial assistance where necessary. Address IF-112, Industrial Finishing.

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# Booklets Catalogs Circulars

### Degreaser Temperature Control

The Sarco Co., Inc., 475 Fifth Ave., New York 17, N.Y., has published a new bulletin, No. 650, which describes special temperature controls for degreasing and other metal-cleaning machines.

Simple self-operated controls for both heating and cooling are said to maintain vapor lines on degreasers within narrow limits. At the same time they are claimed to effect substantial savings in solvent and water.

The bulletin gives complete description and includes installation details, capacity tables, and other data.

### Portable Sander Bulletins

Two attractively illustrated and informative bulletins about portable sanding machines are ready for free distribution by Sterling Tool Products Co., 365 E. Ohio St., Chicago 11, Ill. One folder describes the merits of the Sterling 1000 Portable Electric Sander. The other explains the air-driven Sterling Model "E" Speed-Bloc Sander. Both bulletins are printed in black with white and yellow background.

### Fungus Resistant Coatings

A new informative bulletin about Dulac Fungus Resistant Coatings for "Tropicalization" of radio equipment, has been compiled and made ready for distribution by Maas & Waldstein Co, Newark 4, N. J.

Contents include U. S. Signal Corps specifications, information about different types of fungus-resistant lacquers and fungus-resistant var-


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**Apply Wyandotte Spray Booth Coating *first* for quicker removal later of layers of inflammable paint. It takes only a thin coating to make cleaning easier, speedier, more economical. Write Wynadotte Chemicals Corporation, J. B. Ford Division, Wynadotte, Michigan, for full details!**

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nishes, detail requirements of specification; instruction for treatment of signal equipment or components thereof, such as the cleaning, masking and preheating of equipment; coverage, spraying, brushing, dipping, drying, identification of treated equipment, plus additional notes pertaining to this essential kind of protective coating.

These 8½x11-in. pages are in loose leaf form, bound in a red and black binder designed to fit into a standard filing cabinet. The information is of timely interest and value.

## Standard Varnish Technical Bulletins

Standard Varnish Works, Staten Island, N.Y. and Chicago, Ill., has just issued the first of a series of technical bulletins for finishing technicians, designers, engineers and all others interested in specific purpose industrial product finishes.

The first of these bulletins is devoted to "Rockloid Baking Enamel," a non-alkyd snythetic with many desirable qualities.

A convenient folder for filing the bulletins is sent with this first bulletin. Requests for the bulletin will be promptly filled if made on business letterhead and addressed to Mr. M. L. Corbin, Sales Manager, Industrial Division, Standard Varnish Works, 2600 Richmond Terrace, Staten Island, N.Y.

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or
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## Infra-Drying Bulletins

Bulletins containing interesting information and attractive illustrations, relating to the use of conveyorized infra-drying ovens for drying paint coatings, have been prepared for free distribution by Wil-Son Mfg. Corp., 156 W. Erie St., Chicago, Ill.

## Adhesives Catalog

A new catalog section on its line of adhesives or cements has just been published by The B. F. Goodrich Co., Akron, Ohio. Copies are now available upon request. In addition to the field of adhesives, the materials covered in the volume serve as fabric coatings, binders, sealers, etc.

The catalog section discusses the service requirements and classification of the various adhesives, and then lists and discusses each type offered. Instructions on application and data on the company's standard containers are included, with approximate shipping weights.

## Water-Wash Booth Book

Paasche Airbrush Co., 1917 Diversey Parkway, Chicago 14, Ill., is offering a new free catalog that gives full information about water-wash spray booths and other manual and automatic airpainting equipment. The catalog is of interest and value for present and future reference.

## Two-Color Multiform Decorative Finish

A new bulletin, distributed by Berry Bros., Detroit 7, Mich., describes and illustrates the company's two-color Multiform finish which is adapted to a variety of metal products that the manufacturer wants to make attractive. The two-color coats receive one bake at the same time in the oven.

## Rustproofing Data Sheets

The American Chemical Paint Co., Ambler, Penna., offers Technical Service Data Sheets which reveal facts about an easy and rapid means of removing rust and rust stimulators, in connection with the preservation of iron and steel surfaces.

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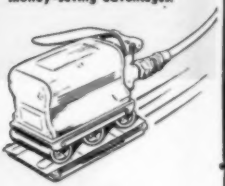

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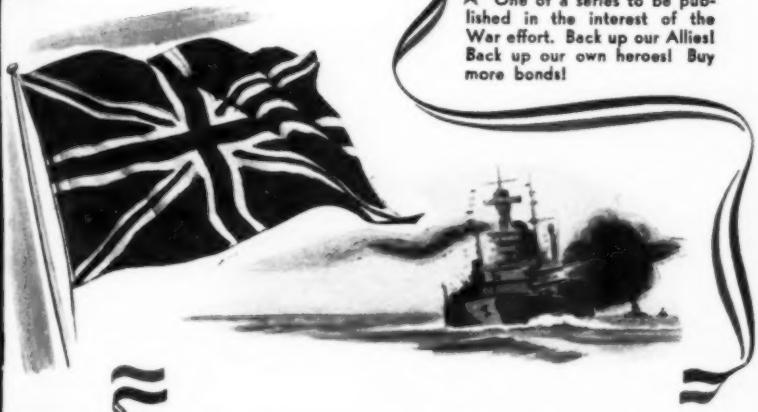

# UNITED KINGDOM

In 1940 the British people endured and weathered blitz bombing by planes. Now, in 1944, it's robot bombs. They are taking these terrifying robot bomb attacks in stride and it is stories like the one about the cockney which will live on as a symbol of real British courage. This cockney was asked by an American visitor why he took the robot bombs so calmly. "I see it like this," he replied. "It takes a 'ell of a lot of work and time to make the bloody things. Then they 'ave to get them into those blinking pits and then up into the ruddy air. Then it's a long way from France to London—and if they do get to London they still 'ave to find Lambeth. Then it ain't every one can find 109 Acacia Road and, if they do, ten to one, I'm in the pub."

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